

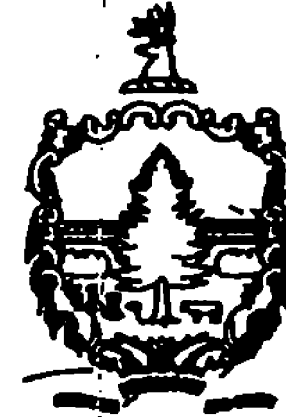
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22	B-16	12-14-71
23	E-2	2-3-86R
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26	E-7A	2-3-86R
27	E-8	2-3-86R
28	E-15	2-3-86R
29	E-15B	2-3-86R
30	E-15C	2-3-86R
31	E-19	2-3-86R
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33	E-24A	2-3-86R
34	E-29	2-3-86R
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38	E-39	2-3-86R
39	E-50	2-3-86R
40	SCB-DI-75	9-14-81R

STATE OF VERMONT AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT TOWNS OF LUDLOW & MT. HOLLY COUNTYS OF WINDSOR & RUTLAND

BEGINNING IN THE TOWN OF LUDLOW ON VT 103 MM 2.862 ~ MM 4.059, RESURFACING AND NEW PAVEMENT MARKINGS, (F025-1(29)S)
LUDLOW VT 100 BRIDGE #99, INSTALL TRAFFIC CONTROL, REHABILITATE DECK, REMOVE TRAFFIC CONTROL.
MT. HOLLY VT 103 BRIDGE #33, INSTALL TRAFFIC CONTROL, REHABILITATE DECK, REMOVE TRAFFIC CONTROL.

LENGTH OF F 025-1(29)S : 1.197 MILES
6320 FEET

LENGTH OF STRUCTURE : BRIDGE #99 = 84.00'
BRIDGE #33 = 84.51'

TOTAL LENGTH OF STRUCTURES = 168.51'

Date OCT 27 1987

FRANK W. Whitcomb CONSTRUCTION CORPORATION
Contractor

Signature

Title

Transportation Secretary's Signature

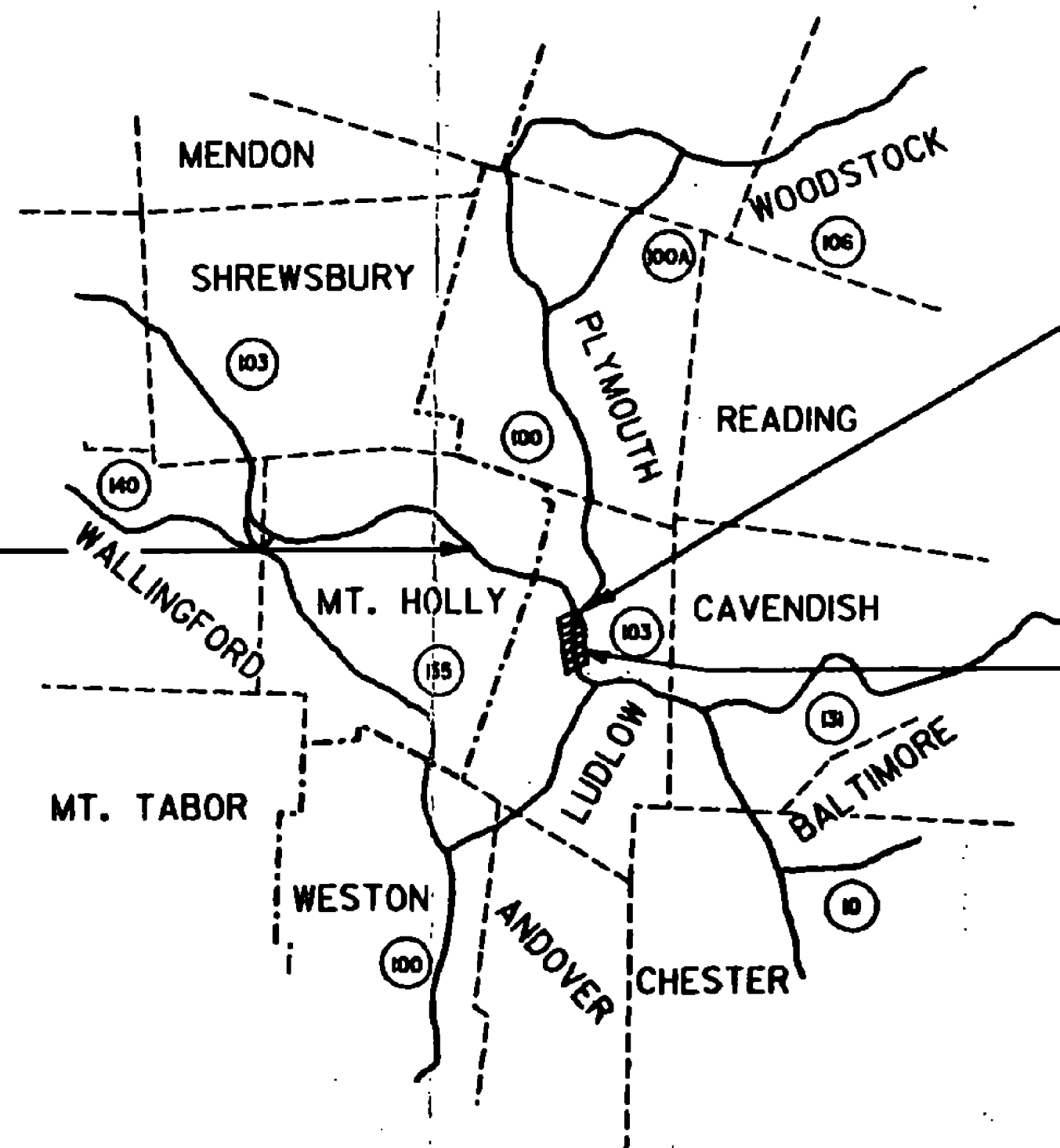
CONVENTIONAL SIGNS

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

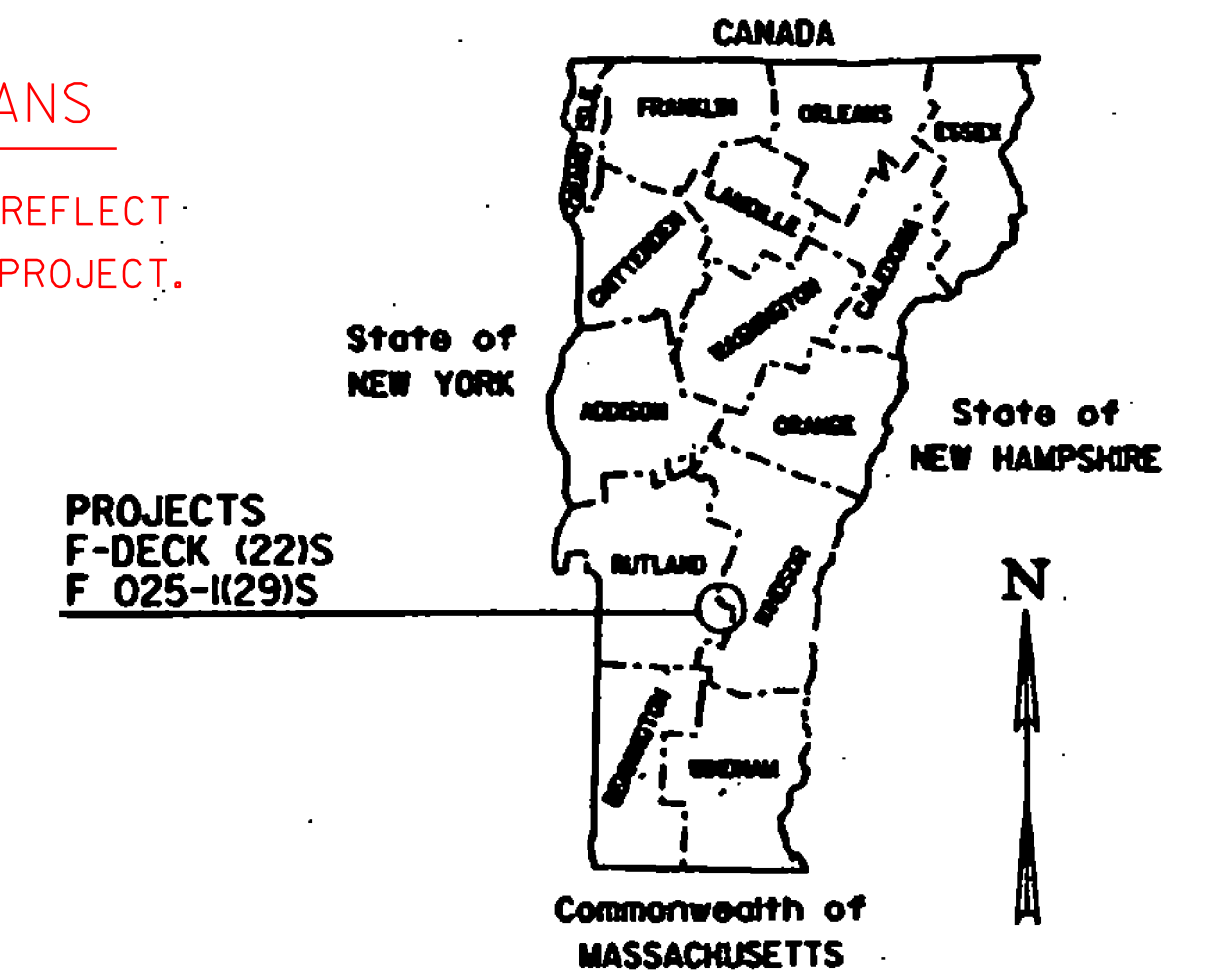
F-DECK (22)S
BRIDGE #33

F-DECK (22)S
BRIDGE #99

F 025-1(29)S
MM 2.862 ~ MM 4.059



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



PROJECT PROCESSED UNDER
SECONDARY ROAD PLAN

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING
CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY
ADMINISTRATION OR THE CHIEF ENGINEER.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE
WITH THESE PLANS AND THE STANDARD SPECIFICATIONS
FOR CONSTRUCTION DATED 1986, AS APPROVED BY THE
FEDERAL HIGHWAY ADMINISTRATION ON NOVEMBER 2, 1986
FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT
REVISIONS AND SUCH REVISED SPECIFICATIONS AND
SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE
PLANS.

SUBMITTED BY ORDER OF THE STATE TRANSPORTATION BOARD	
APPROVED <i>David P. Kelly</i>	DATE 7/14/87
CHIEF ENGINEER	
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
APPROVED	DATE
DIVISION ADMINISTRATOR	
LUDLOW, MT. HOLLY	
PROJECT F	NO. DECK (22)S
F	025-1(29)S
SHEET 1 OF 40 SHEETS	

STATE OF VERMONT
AGENCY OF TRANSPORTATION

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS
		LUDLOW VT 103 F025-1(29)S
		BITUMINOUS CONC. PAVEMENT
479	TON	LEVEL
1405		WEARING
1170		SHOULDERS
100		DRIVE AND APPROACHES
26		ROUNDING
3180	TOTAL	

[illegible][illegible]

QUANTITY SHEET

STATE OF VERMONT
AGENCY OF TRANSPORTATION

[illegible][illegible][illegible]

STATIONS		PAVEMENT WIDTHS			EQUATIONS		FEET	MILES	REMARKS
FROM	TO				+	-			
TOTALS									

PROJECT NAME LUDLOW , MT. HOLLY

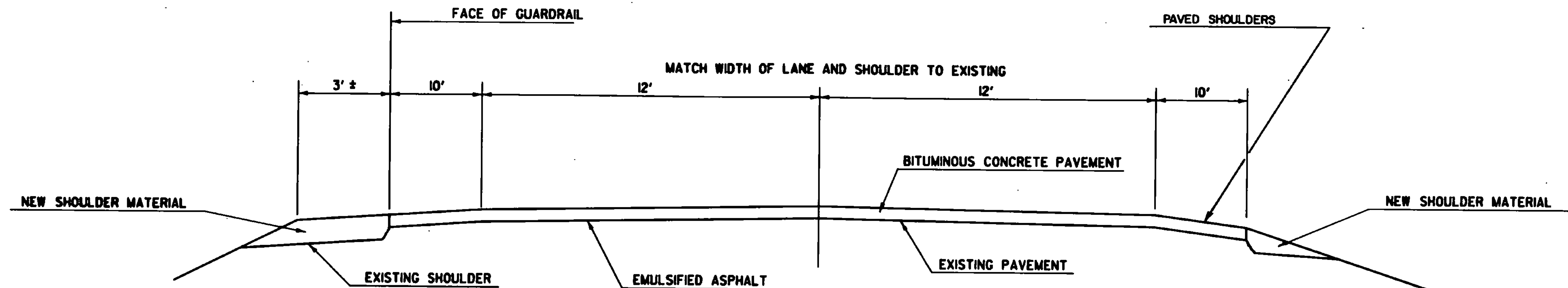
PROJECT NUMBER F-DECK (22) S - F025-1(29)S

SHEET **2A OF 40** SHEETS

TYPICAL SECTIONS 1986 PAVING PROGRAM

1 1/2" BITUMINOUS CONCRETE PAVEMENT (1/4")
 400 TONS, PER/MILE LEVELING COURSE
 EMULSIFIED ASPHALT, TO BE APPLIED AT THE RATE OF .015 GAL./SQ. YD.
 OR AS DIRECTED BY THE ENGINEER.

NOTE: UNLESS OTHERWISE DETERMINED BY THE RESIDENT ENGINEER,
 TYPE IV MIX WILL BE USED FOR LEVELING AND TYPE III MIX
 WILL BE USED FOR THE WEARING COURSE.



ROUTE VT 103 MILE 2.862 TO 4.059 MILE

ESTIMATED QUANTITY OF SHOULDER MATERIAL
 WITH GUARDRAIL WITHOUT GUARDRAIL
 0.81 SQ. FT. 0.06 SQ. FT.

SURVEYED BY _____ DATE _____
 DRAWN BY REDMOND DATE 8-88
 TRACED BY _____ DATE _____
 LUDLOW
 PROJ. F NO. 025-1(29)3
 SHEET 3 OF 40

1. **PLANKER,**
 2. **STATION,**
 3. **SIGN NUMBER**

TOTALS

[illegible]

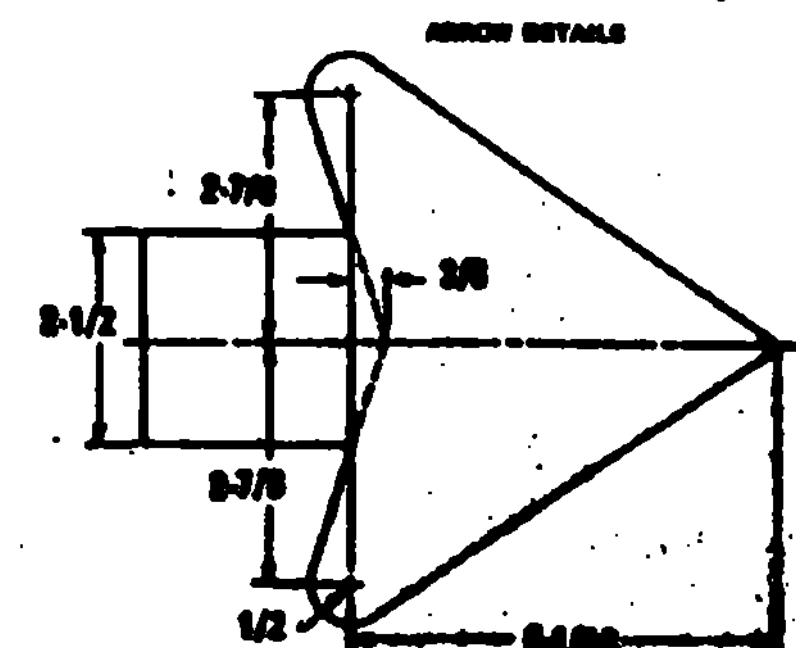
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MATERIALS
SEE STD. E-15



MILE	MILE	LT.	RT.	QTY. LEFT	QTY. RT.	TOTAL
2.00	2.20	Solid	Solid	1785	1785	3570
3.20	3.55	Dash	Dash		462	462
3.55	2.64	Dash	Solid	119	475	594
3.64	3.90	Solid	Solid	1323	1323	2746
						7372
			4 TH'S 40' x 2		-	320
						7052
			1002 lost in leveling		+	7052
						14104
			Explosives around Islands		+	800
					TOTAL	14904

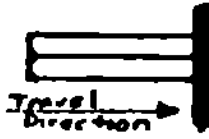
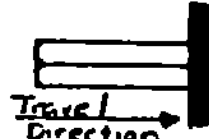
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DRAWN BY JB DATE 12-88
 CWKED BY _____ DATE _____
 LUDLOW
 PROJ. F NO. 025-1(29)5
 TRAFFIC SHEET NO. 528 SHEET 4 OF 40

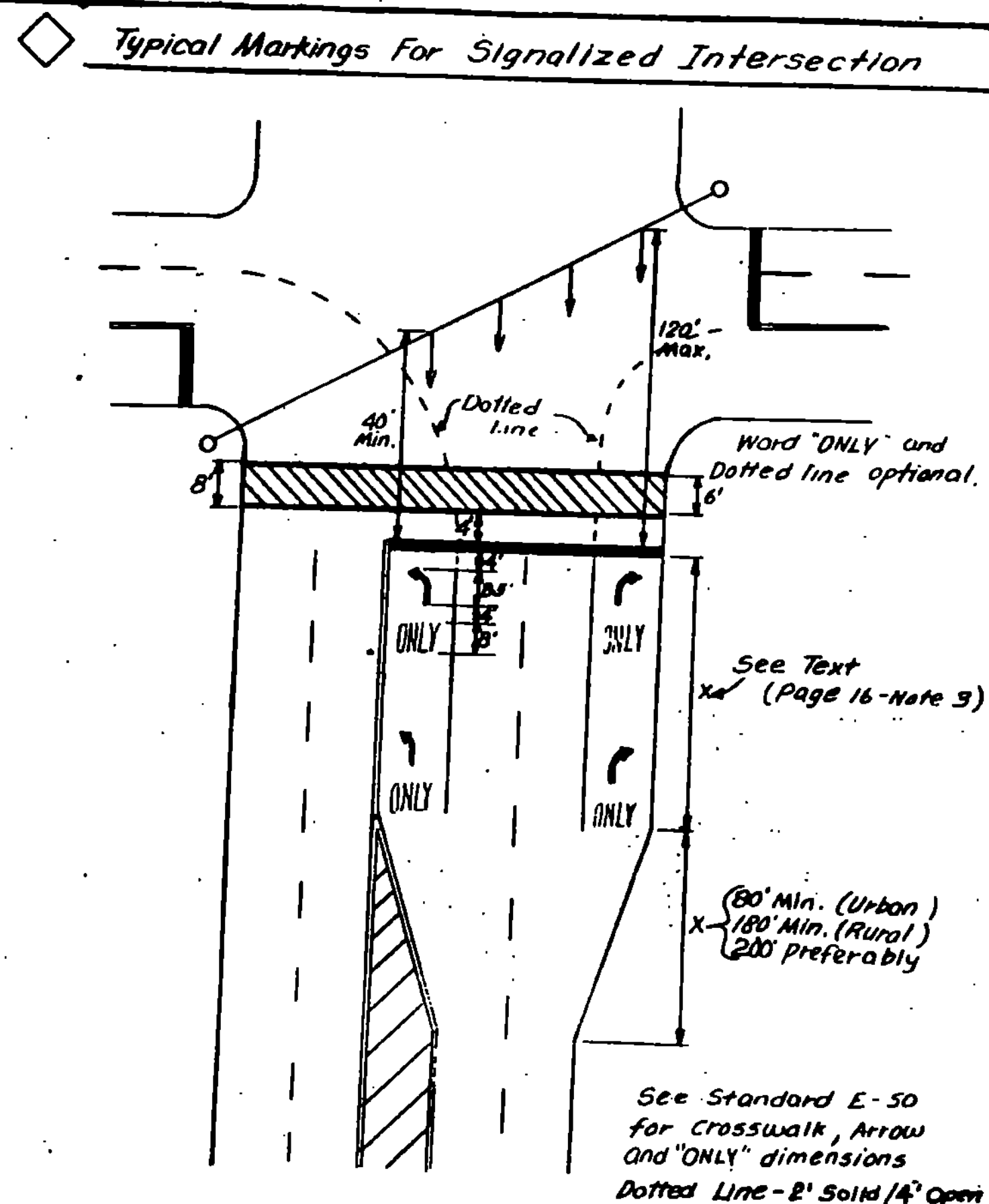


1. THE STOP LINE SHOULD BE PLACED AT THE DESIRED STOPPING POINT. IN NO CASE MORE THAN 30' OR LESS THAN 4' FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY.
2. WHEN A TRAFFIC SIGNAL IS PRESENT, DELETE WORDING "STOP" AND PLACE STOP BAR A MINIMUM OF 40' FROM THE NEAREST SIGNAL HEAD.
3. ON ONE-WAY RAMPS THE 4" DOUBLE YELLOW CENTERLINE SHALL BE REPLACED WITH A 4" SINGLE YELLOW EDGE LINE.
4. ON ONE-WAY RAMPS THE STOP SIGN SHALL BE REPLACED WITH A TYPE "R" ASSEMBLY ON EACH SIDE OF THE RAMP. A TYPE "A" ASSEMBLY CONSIST OF A STOP SIGN, A "DO NOT ENTER" SIGN AND TWO "ONE WAY" SIGNS.

APPLICATION NOTES

1. Edge lines shall be placed 1'-0" from curb, minimum.
 2. Lane widths based on available roadway width. Preference shall be given to thru lanes with a preferred width of 12'. Left and right turn lanes may be between 10'-12' in width.
 3. Exclusive turn lanes (left or right) - Turn lane lanes shall be solid and extend back from the stopbar an adequate distance to store turning vehicles. Generally, the lane line will extend back to the point of full lane width. The edge line taper rate should be 15:1 (minimum). In urban areas an 80' minimum is required. In both rural and urban areas a 200' taper is desirable. An estimate of length required can be determined by dividing the average hourly turning volume by the number of cycles per hour. Multiply the result by 25' per vehicle and then multiply by 1.5 to 2.0. Existing geometry may restrict turn lane length.
 4. Turn arrows shall be placed at the begin and end of the left or right turn lane and in the middle if the lane length exceeds 200'.
 5. Turn arrows placed at the end of the lane with the stop bar shall be placed with a 4' gap between the stop bar and arrow.
 6. There shall be a 4' gap between turn arrows and word markings.
 7. When word markings are used at the beginning of a turn lane the markings shall begin at the start of the solid white lane line.
 8. The word marking STOP shall be placed with a 4' gap between the marking and the stop bar.
 9. Gore markings shown are only approximate. Marking shall be as detailed on Standard Sheet E-50.
 10. Stopbars shall be located no closer than 40' from the nearest signal face and no further than 120' from the furthest face. At intersections where there are existing vehicle detector loops, care should be taken in locating the stop bar. In most cases the stopbar should be at or just behind the front edge of the loop.
- 
OR

- If loop locations are not known, contact either the Maintenance Division or Traffic Design for information.
11. Dotted line extensions (lane lines and/or centerline) may be used at some intersections to emphasize turning paths.
 12. When two line text is used for pavement markings (Signal Ahead, etc.) the two words shall read up and have a space of 32" between them. The corresponding sign shall be half way between the words.

Revision - 11/84
Note 3 revised
Notes 10&11 added
Note 12 added 8/85



 GUIDELINES FOR MINIMUM INTERIM PAVEMENT MARKINGS
IN CONSTRUCTION ZONES

- CENTERLINE AND GORE AREA MARKINGS SHALL BE APPLIED AT THE END OF EACH WORKING DAY. THE FOLLOWING LAYOUT REQUIREMENTS SHALL BE MET:
- NO PASSING BARRIER
SOLID STRIPES.
- DASHED LINE
10-FOOT SOLID LINE WITH 30-FOOT GAP.
- GORE AREA
(GORE AREAS TO INCLUDE 8' CHANNELIZING LINE AND DASHED LINE)
PER STANDARD SHEET E-50
- B. EDGE LINES
WHEN SPECIFIED, EDGE LINES ARE NOT REQUIRED UNTIL COMPLETION OF THE PROJECT. ON INTERSTATE PROJECTS, TEMPORARY EDGE LINES SHOULD BE APPLIED WHERE TRAFFIC VOLUMES AND SPEEDS ARE HIGH AND DELAY OF SEVERAL DAYS IS ANTICIPATED.
- C. TEMPORARY MARKINGS MAY CONSIST OF PAINT, TAPE OR RAISED PAVEMENT MARKERS (RPM'S). THE TAPE SHALL BE A RETRO-REFLECTIVE FILM ON A CONFORMABLE METALLIC BACKING THAT CAN BE PAVED OVER. TAPE MAY BE USED ON THE FINAL SURFACE COURSE IF IT WILL NOT INTERFERE WITH THE FINAL MARKING APPLICATION. TEMPORARY TAPE MARKINGS WILL BE OFFSET AND REMOVED WHEN PROJECT IS FINISHED AND FINAL CENTERLINE PAINTED. THE TAPE SHALL BE THE TYPE THAT IS REMOVABLE INTACT AND NOT SEPERATE AT ANY TIME. THE RPM'S SHALL HAVE A SELF-ADHESIVE BACKING EASILY REMOVED BEFORE PAVING AND SHALL CONFORM TO THE FOLLOWING LAYOUT PATTERN:
- NO PASSING BARRIER
NO RPM'S ALLOWED.
- DASHED LINE
FOUR RETRO-REFLECTIVE RPM'S ON 3 1/2 FOOT CENTERS WITH A 30' GAP.
- SOLID LINE - EDGE LINES
INTERSTATE MEDIAN SIDE-RETRO-REFLECTIVE RPM'S ON 4 TO 5 FOOT CENTER. DRIVERS RIGHT SIDE-RPM'S NOT ALLOWED.
- D. WHEN PAINT IS USED FOR TEMPORARY MARKING, AN ALTERNATE MATERIAL SUCH AS TAPE OR RPM'S SHALL BE ON HAND IN THE EVENT RAIN PREVENTS THE PAINT APPLICATION FROM BEING COMPLETED. ALL PAINT SHALL BE REFLECTORIZED.
- E. PAYMENT FOR PAINT AND TAPE SHALL BE COMPUED ON A LINEAR FOOT BASIS AS IF PAINT WAS USED. PAYMENT FOR THE RPM'S SHALL BE COMPUED AS IF AN EQUIVALENT PAINT LINE WAS USED. (FOR EXAMPLE, DASHED LINE PAID AS 10 FEET OF PAINT, SOLID LINE PAID AS THE TOTAL DISTANCE COVERED WITH THE MARKERS).
- F. PRIOR TO ACCEPTANCE, THE PAVEMENT MARKINGS SHALL BE COMPLETED FOR THE ENTIRE PROJECT BY THE CONTRACTOR AS DETAILED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER.

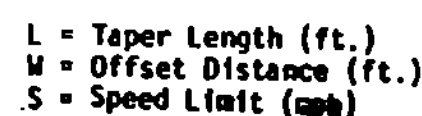
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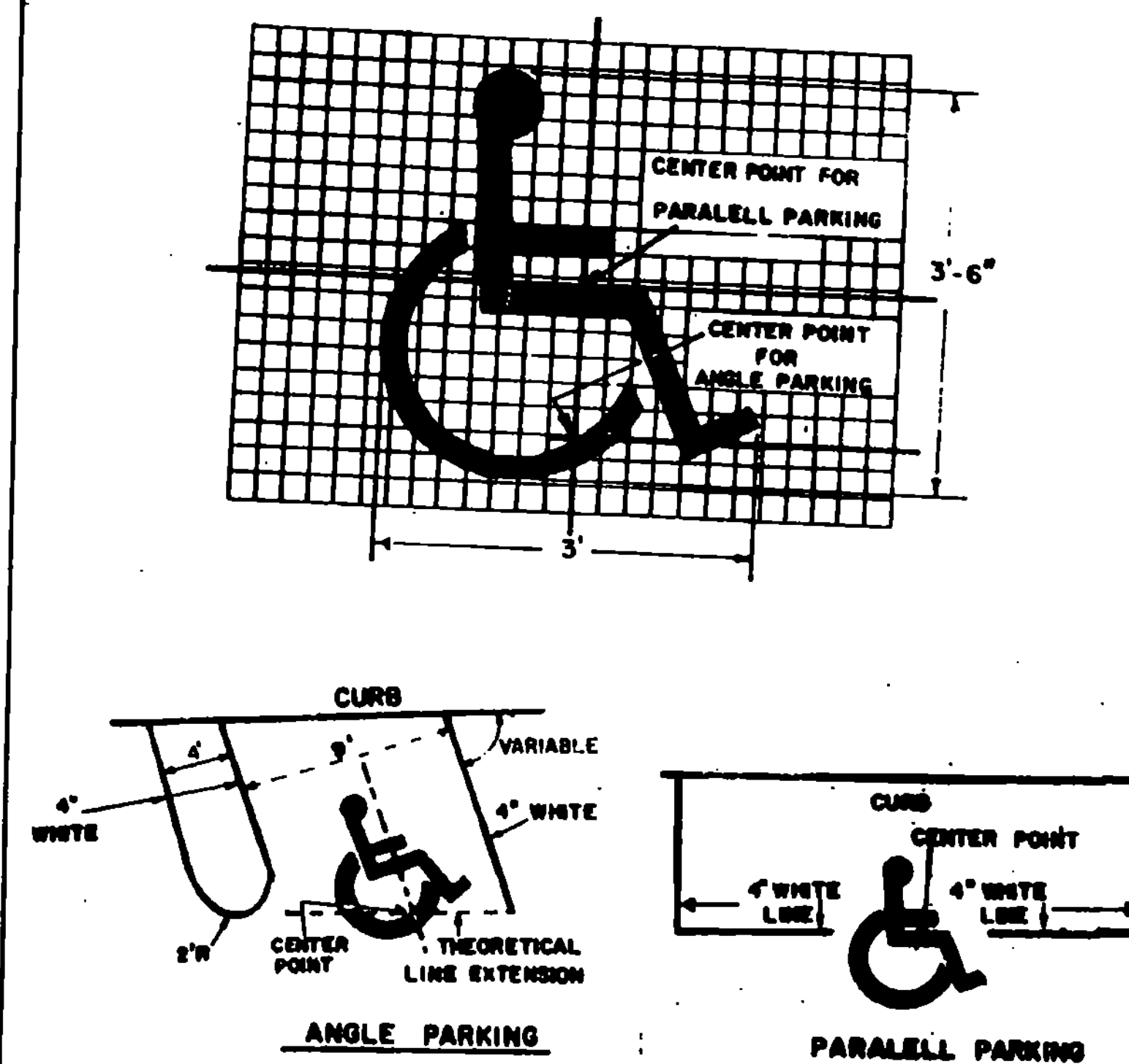
* Centerline treatment shall consist of a minimum of 400 feet of solid line in advance of the intersection and shall be paired with either a solid or dashed line depending on sight distance availability in the opposing lane.

PAVEMENT WIDTH TRANSITIONS

- Case 1 Two lane highway to divided highway**
A solid line in the direction of travel is begun at a location 200 feet in advance of the begin taper for the pavement width transition.
- Case 2 Divided highway to two lane highway**
A solid line in the direction of travel is begun at the end of taper and continues in the direction of travel for a distance of 550 feet.



 HANDICAPPED PAVEMENT MARKING DETAILS



PAVEMENT MARKING DETAILS

LEGEND

 = TO BE USED WITH THIS PROJECT

SURVEYED BY _____ DATE _____
DRAWN BY _____ DATE _____
TRACED BY _____ DATE _____

LUDLOW

PROJ. F HQ 025-1(29)5

TRAFFIC SHEET NO. 1 SHEET 5 OF 40

GENERAL NOTES

VT 101 OVER PATCH BROOK, BR 22 - SEE SHEET F-DECK(22)

PROJECT DESCRIPTION

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS AS PER SHEETS 9 & 11.
2. DECK REHABILITATION INCLUDES REMOVING THE EXISTING PAVEMENT, AS PER THE GENERAL NOTES, REPAIRING CONCRETE DECK AND CURBS AS REQUIRED, REPAIRING THE TRANSVERSE JOINTS AT THE ABUTMENTS, REPOINTING THE GRANITE CURB JOINTS AS NEEDED, APPLYING WATER REPELLENT, INSTALLING NEW SHEET MEMBRANE WATERPROOFING, REPAVING WITH 2 1/2 INCHES OF BITUMINOUS CONCRETE PAVEMENT, AND THE APPLICATION OF NEW PAVEMENT MARKINGS.
3. REMOVE TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS, IF PLACED ON THE PAVEMENT SURFACE.

VT 101 OVER PATCH BROOK, BR 22

SPECIFIC NOTES

1. THERE ARE SCUFFERS ON THE LOW SIDE (UPSTREAM) OF THIS BRIDGE. SEE SHEET 14 FOR SCUFFER TREATMENT.
2. ALL WEEP PIPES (LOW SIDE ONLY) SHALL BE SEALED OVER WITH SHEET MEMBRANE WATERPROOFING.
3. COMPRESSION SEALS AT THE ENDS OF THIS BRIDGE SHALL BE REPAIRED, AS DETERMINED BY THE ENGINEER, IN ACCORDANCE WITH DETAILS 4 AND 5 ON SHEET 13. THE WIDTH OF THE REPLACEMENT COMPRESSION SEALS SHALL BE 1-3/4 TIMES THE WIDTH OF THE OPENING, AS MEASURED IN THE FIELD. THE CONTRACTOR MAY USE OTHER CONFIGURATIONS FOR THE NEOPRENE COMPRESSION SEALS AT THE TRANSVERSE JOINTS BETWEEN THE ABUTMENTS AND APPROACH SLABS, PROVIDED THEY MEET THE SPECIFICATIONS FOR ITEM 524.15.
4. THERE ARE NO DRAIN TROUGHS OR DOWNSPOUTS ON THIS BRIDGE.
5. THIS BRIDGE DECK IS TO BE REPAVED CURB TO CURB WITH 2-1/2 INCHES OF BITUMINOUS CONCRETE PAVEMENT IN TWO COURSES. THE BOTTOM COURSE SHALL BE 1-1/2 INCHES OF TYPE IV MIX AND THE TOP COURSE SHALL BE 1 INCH OF TYPE IV MIX.
6. SHEET 13, DETAIL 2, DOES NOT APPLY TO THIS STRUCTURE.
7. THE FOLLOWING GENERAL NOTES DO NOT APPLY TO THIS STRUCTURE: NOTES 28, 29, 30, AND 31.

VT 100 OVER BRANCH BROOK, BR 22 - LUDLOW F-DECK (22)

PROJECT DESCRIPTION

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS AND REMOVE TRAFFIC ISLANDS, CURBS AND SIGNS AS PER SHEETS 10, 11, & 12.
2. DECK REHABILITATION INCLUDES REMOVING THE EXISTING PAVEMENT, AS PER THE GENERAL NOTES, REPAIRING CONCRETE DECK AND CURBS AS REQUIRED, REPAIRING THE TRANSVERSE JOINTS AT THE ABUTMENTS, REPOINTING THE GRANITE CURB JOINTS AS NEEDED, APPLYING WATER REPELLENT, INSTALLING NEW SHEET MEMBRANE WATERPROOFING, REPAVING WITH 2 1/2 INCHES OF BITUMINOUS CONCRETE PAVEMENT, AND THE APPLICATION OF NEW PAVEMENT MARKINGS.
3. REMOVE TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM, VEHICLE LOOP DETECTORS (IF PLACED ON THE PAVEMENT SURFACE), AND REPLACE TRAFFIC ISLANDS, SIGNS AND CURBS AS REQUIRED.

VT 100 OVER BRANCH BROOK, BR 22

SPECIFIC NOTES

1. THERE ARE SCUFFERS ON BOTH SIDES OF THIS BRIDGE. SEE SHEET 14 FOR SCUFFER TREATMENT.
2. ALL WEEP PIPES (BOTH SIDES) SHALL BE SEALED OVER WITH THE SHEET MEMBRANE WATERPROOFING.
3. COMPRESSION SEALS AT THE ENDS OF THIS BRIDGE SHALL BE REPAIRED, AS DETERMINED BY THE ENGINEER, IN ACCORDANCE WITH DETAILS 4 AND 5 ON SHEET 13. THE WIDTH OF THE REPLACEMENT COMPRESSION SEALS SHALL BE 1-3/4 TIMES THE WIDTH OF THE OPENING, AS MEASURED IN THE FIELD. THE CONTRACTOR MAY USE OTHER CONFIGURATIONS FOR THE NEOPRENE COMPRESSION SEALS AT THE TRANSVERSE JOINTS BETWEEN THE ABUTMENTS AND APPROACH SLABS, PROVIDED THEY MEET THE SPECIFICATIONS FOR ITEM 524.15.
4. THERE ARE CONCRETE SHOULDERS AT THE CURBS WHICH WILL BE REMOVED IN THEIR ENTIRETY. THIS WORK WILL BE PAID AS "PREPARATION OF CONCRETE SURFACE, CLASS I OR II." CONCRETE SHOULDERS ARE BOTH APPROXIMATELY 2.5 FEET WIDE.
5. THIS BRIDGE DECK IS TO BE REPAVED CURB TO CURB WITH 2-1/2 INCHES OF BITUMINOUS CONCRETE PAVEMENT IN TWO COURSES. THE BOTTOM COURSE SHALL BE 1-1/2 INCHES OF TYPE IV MIX AND THE TOP COURSE SHALL BE 1 INCH OF TYPE IV MIX.
6. THERE ARE NO DRAIN TROUGHS OR DOWNSPOUTS ON THIS BRIDGE.
7. SHEET 13, DETAIL 2, DOES NOT APPLY TO THIS STRUCTURE.
8. THE FOLLOWING GENERAL NOTES DO NOT APPLY TO THIS STRUCTURE: NOTES 28, 29, 30, AND 31.

DATUM
VERTICAL _____
HORIZONTAL _____

SURVEYED BY _____ DATE _____
DRAWN BY _____ DATE _____
TRACED BY _____ DATE _____
LUDLOW - MT. HOLLY
PROJ. F NO. DECK (22) 5
SHEET 6 OF 40

GENERAL NOTES

- 1 NO SURVEY WAS TAKEN OF THIS PROJECT. INFORMATION SHEETS INCLUDED IN THE PLANS WERE TAKEN FROM ORIGINAL PLANS AND ARE FOR INFORMATION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR FIELD CHECKING ANY AND ALL DIMENSIONS APPLICABLE TO HIS WORK.
- 2 TRAFFIC IS TO BE CONTROLLED AND MAINTAINED AT ALL TIMES AT ALL THE BRIDGE LOCATIONS.
- 3 SIGNS, BARRICADES, AND TRAFFIC CONTROL DEVICES SHALL BE CLEANED WEEKLY AND THIS WORK SHALL BE INCLUDED IN THE PRICE FOR ITEM 527.10, 'MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS', OR ITEM 641.10, 'TRAFFIC CONTROL'.
- 4 ALL PRIVATE VEHICLES BELONGING TO THE WORK CREWS SHALL BE PARKED OFF THE PROJECT.
- 5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT PRIOR TO COMMENCING ANY WORK.
- 6 IF A COLD PLANER IS USED TO STRIP PAVEMENT FROM THE DECKS OR A PORTION OF THE APPROACH SLABS, THE FINAL ONE HALF (1/2) INCH SHALL BE REMOVED BY LOADER, GRADER, OR EQUIPMENT APPROVED BY THE ENGINEER. THIS WORK SHALL ALL BE INCLUDED IN THE UNIT PRICE BID FOR 'REMOVAL OF BRIDGE PAVEMENT'. ONLY FIVE (5) FEET OF APPROACH SLABS NEED TO BE STRIPPED TO BARE CONCRETE. ONLY THAT CONCRETE THAT IS LOOSE OR SPALLED ON EXPOSED PORTION OF APPROACH SLABS NEED BE REPLACED, AS DIRECTED BY THE ENGINEER. REMOVAL AND REPLACEMENT OF CONCRETE ON APPROACH SLABS TO BE PAID AS 'PREPARATION OF CONCRETE SURFACES, CLASS I (MOD.)'
- 7 PARTIAL REMOVAL OF BITUMINOUS CONCRETE PAVEMENT FROM APPROACH SLABS SHALL BE PAID UNDER ITEM 529.10, 'REMOVAL OF BRIDGE PAVEMENT'.
- 8 THERE SHALL BE SOME METHOD OF TRANSITIONING FROM EXISTING PAVEMENT TO BARE CONCRETE DURING THE CONSTRUCTION PHASE. THIS TRANSITION SHALL BE ACCOMPLISHED BY USING THE COLD PLANING MACHINE, PAVEMENT WEDGES, OR ANY METHOD APPROVED BY THE ENGINEER. THE DISTANCE ALONG ROADWAY NEEDED TO OBTAIN A SMOOTH TRANSITION SHALL BE AS DETERMINED BY THE ENGINEER. THE WIDTH OF TRANSITION LANES SHALL BE SUFFICIENT TO MAINTAIN A MINIMUM OF ONE-WAY TRAFFIC. THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 527.10, 'MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS', OR ITEM 641.10, 'TRAFFIC CONTROL'.
- 9 DURING BRIDGE PAVEMENT REMOVAL, THE CONTRACTOR SHALL EXERCISE CARE TO INSURE THAT NO FURTHER DAMAGE OCCURS TO PORTLAND CEMENT CONCRETE DECK.
- 10 AFTER REMOVING THE BRIDGE PAVEMENT, ANY SPOTS IN THE TRAVELED LANES THAT ARE DANGEROUS TO THE TRAVELING PUBLIC WHILE WORK IS PROCEEDING IN THE ADJACENT LANE SHALL BE TEMPORARILY REPAIRED BY ANY METHOD APPROVED BY THE ENGINEER. THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 527.10, 'MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS', OR ITEM 641.10, 'TRAFFIC CONTROL'.
- 11 DECK AREAS TO BE REPAIRED SHALL BE MARKED ON THE STRIPPED DECK BY VERMONT AOT PERSONNEL. THE METHODS USED FOR DEFINING AREAS NEEDING REPAIR MAY BE EITHER BY VISUAL INSPECTION, THE CHAIN DRAG METHOD, THE ASTM C-876 (HALF CELL POTENTIAL), OR A COMBINATION THEREOF. ANY EXPOSURE OF REBAR REQUIRED OF THE CONTRACTOR BY THE ENGINEER TO PERFORM ASTM C-876 TEST SHALL BE SUBSIDIARY TO ALL OTHER ITEMS IN THE PROJECT. ALL NECESSARY CLEANING OF THE DECK SURFACE PRIOR TO THE MARKING OF THE DECK REPAIR AREAS WILL BE PERFORMED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. THIS WILL ALSO INCLUDE ADDITIONAL CLEANINGS AT OTHER TIMES AS THE WORK PROGRESSES. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO ALL OTHER PAY ITEMS.
- 12 DECK SURFACE IS TO BE REPAIRED AS NECESSARY UNDER ITEMS 501.45 OR 501.46, 'PREPARATION OF CONCRETE SURFACE, CLASS I OR CLASS II (MOD.)'. ALL EDGES OF REPAIRED AREAS ARE TO BE SAW CUT SQUARE AND A MINIMUM OF ONE (1) INCH DEEP. SEE SHEET 14. THE ANGLE BETWEEN THE DECK AND AIR HAMMER AXIS SHALL BE FROM ZERO (0) DEGREES TO FORTY-FIVE (45) DEGREES. AIR HAMMERS, USED FOR THE REMOVAL OF UNSOUND AND DETERIORATED CONCRETE, SHALL HAVE A MAXIMUM RATING OF THIRTY (30) POUNDS AND SHALL USE GAD OR CHISEL POINTS ONLY.

IF REINFORCING STEEL IS DAMAGED OR IF CONCRETE IS DEBONDED, DELAMINATED OR OTHERWISE DAMAGED, BEYOND THE DEFINED LIMITS OF REMOVAL, BECAUSE OF THE IMPROPER USE OF THE AIR HAMMERS, THEN THE CONTRACTOR SHALL REPAIR THE DAMAGED AREAS BY REMOVING AND REPLACING THE CONCRETE AND/OR REINFORCING STEEL AT HIS OWN EXPENSE.
- 13 IF MORE THAN ONE-QUARTER OF THE CIRCUMFERENCE OF THE REBAR IS EXPOSED OR THE BOND BETWEEN THE CONCRETE AND REBAR IS BROKEN, THEN PROCEED TO ITEM 501.46, 'PREPARATION OF CONCRETE SURFACE, CLASS II (MOD.)'. THE DECK TO BE PATCHED AND EXPOSED STEEL WHICH WILL HAVE CONCRETE PLACED AGAINST OR AROUND IT (I.E., METAL PLATE EXPANSION JOINTS, SCUPPERS, FINGER PLATE EXPANSION JOINTS, REINFORCING STEEL, ETC.) SHALL BE SANDBLASTED A MAXIMUM OF 24 HOURS PRIOR TO PLACING THE NEW CONCRETE. THE AREA SHALL BE VACUUMED OR FLUSHED, USING HIGH PRESSURE AIR OR WATER TO REMOVE ALL LOOSE PARTICLES, DUST AND DEBRIS. AFTER SANDBLASTING, ONCE THE CONCRETE IS WET, WHETHER FROM FLUSHING OR RAIN, THE CONCRETE MUST BE KEPT WET UNTIL THE PLACING OF NEAT CEMENT AND CONCRETE. IF THE CONCRETE IS ALLOWED TO DRY OUT, THE AREA MUST BE SANDBLASTED AGAIN AND ENTIRE AREA VACUUMED OR FLUSHED AGAIN. THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEMS 501.45 AND 501.46, 'PREPARATION OF CONCRETE SURFACE, CLASS I' OR 'CLASS II (MOD.)'.
- 14 QUANTITIES FOR ITEMS 501.45 (MOD.) AND 501.46 (MOD.) ARE ESTIMATED, BASED ON THE RESULTS OF USING ASTM C-876, 'STANDARD TEST METHOD FOR HALF CELL POTENTIALS OF REINFORCING STEEL IN CONCRETE', USING THE FOLLOWING LIMITS:

INTERSTATE - POTENTIALS OF 0.35 VOLTS OR GREATER
ALL THE REST - POTENTIALS OF 0.40 VOLTS OR GREATER
- 15 BRIDGE DECK AND APPROACH SLAB PATCHES SHALL BE MADE WITH 'CONCRETE, CLASS AA'. THE AREA TO BE PATCHED SHALL BE THOROUGHLY CLEANED, WETTED AND COATED WITH NEAT CEMENT. THE CEMENT (AASHTO M85, TYPE II) AND WATER SHALL BE MIXED TO A THICK LATEX PAINT CONSISTENCY. THE NEAT CEMENT SHALL NOT BE ALLOWED TO DRY OUT BEFORE IT IS COVERED WITH FRESH CONCRETE. THIS PREPARATION WORK, NEAT CEMENT AND 'CONCRETE, CLASS AA', SHALL BE INCLUDED IN THE BID PRICE FOR ITEMS 501.45 OR 501.46, 'PREPARATION OF CONCRETE SURFACE, CLASS I OR II (MOD.)'.
- 16 ANY CONCRETE REMOVAL THAT EXTENDS BELOW THE DEPTH LIMITS OF ITEM 501.46, 'PREPARATION OF CONCRETE SURFACE, CLASS II (MOD.)', SHALL BE PAID UNDER ITEM 529.25, 'REMOVAL OF CONCRETE OR MASONRY (MOD.)'. PAYMENT SHALL BE UNDER THE LATTER ITEM, WITH THE DEPTH BEING MEASURED FROM THE TOP SURFACE OF THE PORTLAND CEMENT CONCRETE DECK TO A SOUND SURFACE OR BOTTOM OF SAID DECK. ANY FULL DEPTH REPAIRS SHALL NECESSITATE THE USE OF FORMS AND FALSEWORK. ALL FORMWORK, 'CONCRETE, CLASS AA' FALSEWORK, LABOR, TOOLS, EQUIPMENT, AND OTHER INCIDENTALS NECESSARY TO COMPLETE THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 529.25, 'REMOVAL OF CONCRETE OR MASONRY (MOD.)'.
- 17 CONTRACTOR SHALL PROVIDE AND UTILIZE A TWELVE (12) FOOT STRAIGHT EDGE TO INSURE THAT THE PATCHES ARE SMOOTH AND MATCH THE SURROUNDING CONCRETE. THE STRAIGHT EDGE IS TO BE USED PARALLEL TO CENTERLINE ONLY.
- 18 A MEMBRANE-FORMING CURING COMPOUND MAY BE USED TO CURE THE CONCRETE DECK PATCHES. THE TYPE OF CURING COMPOUND SHALL BE APPROVED BY THE ENGINEER PRIOR TO ITS USE. THE CURING PERIOD SHALL BE SEVEN (7) DAYS, REGARDLESS OF WHICH CURING METHOD IS UTILIZED. IF METHOD USED DOES NOT PRODUCE DESIRED RESULTS, ALTERNATE CURING METHODS MAY BE REQUIRED BY THE ENGINEER.
- 19 IF A LIQUID MEMBRANE CURING COMPOUND IS USED PRIOR TO THE APPLICATION OF ANY PROTECTIVE COATING OR PRIMER FOR THE SHEET MEMBRANE, THE CURING COMPOUND SHALL BE BLAST CLEANED FROM THE SURFACE. THIS WORK SHALL BE SUBSIDIARY TO THE OTHER ITEMS IN THE CONTRACT.
- 20 BRIDGE DECKS ARE TO BE PAVED CURB TO CURB WITH BITUMINOUS CONCRETE PAVEMENT, IN TWO COURSES (SEE SHEET 13 AND SPECIFIC NOTES). CARE SHALL BE EXERCISED TO SMOOTHLY TRANSITION THE NEW BRIDGE PAVEMENT INTO THE EXISTING PAVEMENT. ANY COLD PLANING NECESSARY FOR SHAPING BRIDGE APPROACHES FOR FINAL PAVING WILL BE PAID UNDER THE ITEM 'COLD PLANING BITUMINOUS PAVEMENT'. A BUTT PAVEMENT JOINT IS REQUIRED IN LIEU OF FEATHERING NEW PAVEMENT INTO EXISTING.
- 21 ALL WELDING SHALL CONFORM TO SUBSECTION 506. 10 WELDING.
- 22 THE ENGINEER SHALL ORDER REPLACEMENT OF ANY EXISTING REINFORCING STEEL THAT IS DETERIORATED (WITH MORE THAN 25% SECTION LOSS) WITH NEW REINFORCING STEEL OF THE SAME SIZE. ALL REINFORCING STEEL SHALL HAVE A MINIMUM TWO FOOT LAP SPLICE. CONTRACTOR SHALL SUPPLY AN EXTRA EIGHT (8) FOOT BAR OF EACH SIZE FOR TESTING PURPOSES IF NEW REINFORCING STEEL IS USED. REINFORCING STEEL SHALL BE PAID UNDER ITEM 507.15.
- 23 EXISTING JOINT AND BACKING MATERIAL SHALL BE REMOVED AS DIRECTED BY THE ENGINEER. RESTORATION OF JOINTS SHALL BE DONE ACCORDING TO SHEET 13 AND DIRECTION OF THE ENGINEER. LABOR REQUIRED TO REMOVE AND RESTORE JOINT MATERIAL SHALL BE SUBSIDIARY TO THE ITEM 524.15, 'JOINT SEALER, PREFORMED NEOPRENE', OR THE ITEM 622.10, 'INSULATION BOARD'.
- 24 WHEN REPAIRING TRANSVERSE DECK JOINTS, THE CORNER EDGE SHALL BE TOOLED (WITH A SIDEWALK EDGER) IN PLACE OF USING WOOD CHAMFER STRIPS.
- 25 POLYURETHANE JOINT SEALER SHALL BE USED IN CURB JOINTS AS DIRECTED BY THE ENGINEER, AND IN ACCORDANCE WITH TYPICAL ON SHEET 13, DETAIL 3.
- 26 IT MAY BE NECESSARY TO PATCH THE TOP OF THE CURBS (BEHIND THE GRANITE FACING) IN SOME AREAS. LOCATIONS OF THE PATCHES SHALL BE DETERMINED BY THE ENGINEER. THE CONCRETE AND MORTAR BENEATH THE GRANITE CURBS WILL BE REMOVED AND REPLACED WITH CONCRETE, CLASS AA UNDER ITEM 501.45 'PREPARATION OF CONCRETE SURFACE, CLASS I, (MOD.)' AS DETERMINED BY THE ENGINEER. THE PROCEDURES AND PAY ITEMS INVOLVED WILL BE AS SHOWN ON SHEET 13, DETAIL 3.

STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of LUDLOW-MT. HOLLY		Bridge No. _____
Highway No. VT.100&VT.103		Log Sta. _____
		Surv. Sta. _____
DECK REHABILITATION GENERAL		
NOTES		
Designed By G.S. ROGERS	Drawn By D.W. NEWTON	
Checked By _____	Date _____	Bridge Design Supervisor
G.S. ROGERS	6/87	R.L. DARTLEY Date 6/87
PROJECT LUDLOW-MT. HOLLY		PROJECT NO. F-DECK (22)S
L&C. Info. OSAIL30321DECKNOTE1		
Bridge Sheet No. _____	Sheet 3 of 40	

GENERAL NOTES (CONT'D.)

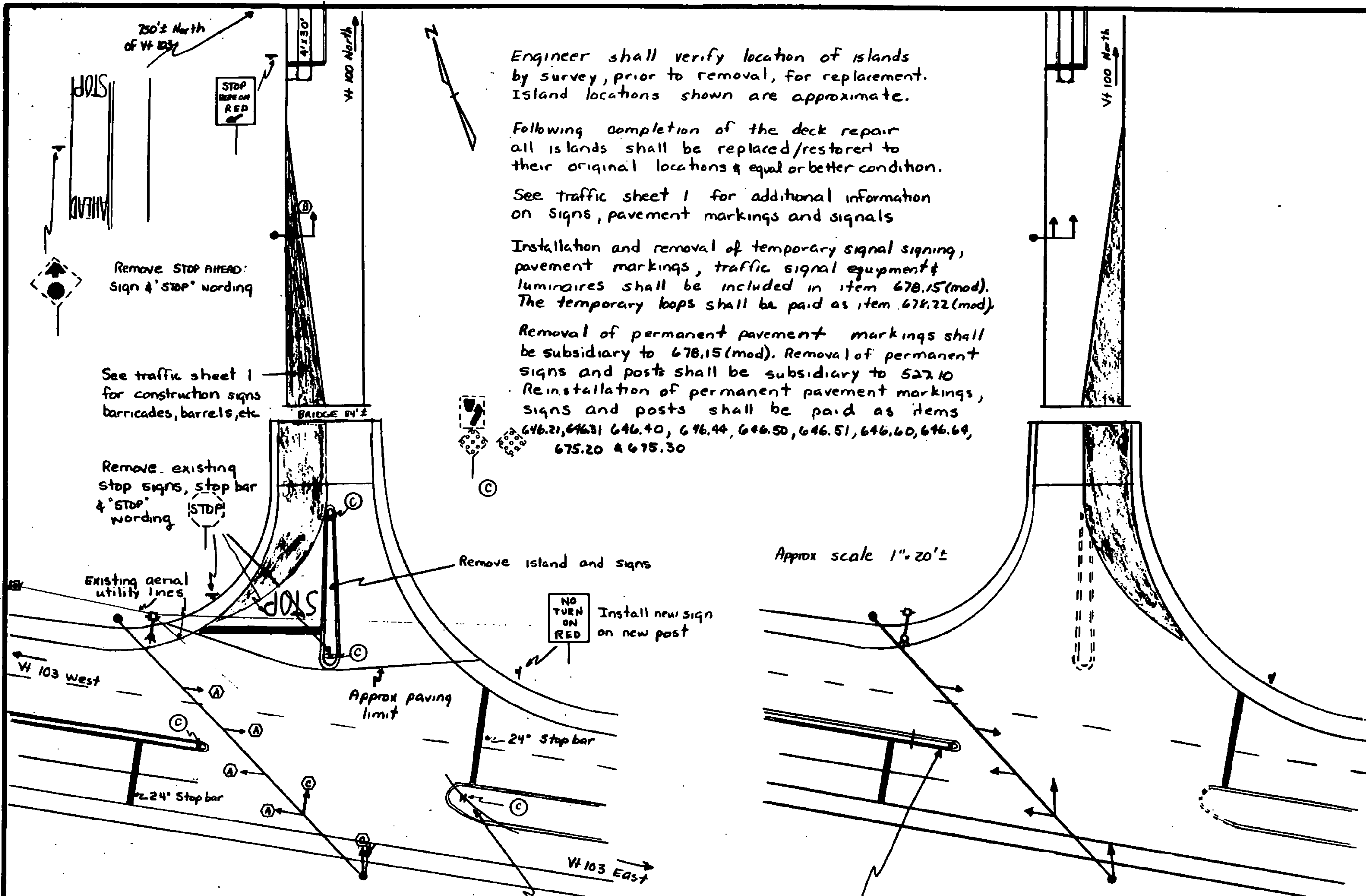
27. ALL JOINTS IN THE GRANITE CURBS SHALL BE REPOINTED WITH 'MORTAR, TYPE I' AS DETERMINED BY THE ENGINEER, AS PER SHEET 13. PAYMENT FOR REMOVAL AND REPLACEMENT SHALL BE SUBSIDIARY TO ALL OTHER ITEMS IN THIS PROJECT.
28. THE ITEM 'INSULATION BOARD' SHALL BE PAID UNDER ITEM 622.10 IN THE TRANSVERSE DECK JOINTS BETWEEN CURBS ONLY. CARE MUST BE TAKEN TO INSURE THAT MEMBRANE PRIMER AND SEALANT DO NOT COME IN CONTACT WITH INSULATION BOARD BECAUSE THE POLYSTYRENE INSULATION BOARD WILL DISINTEGRATE. INSULATION BOARD USED AS BACKING MATERIAL SHALL BE CONSIDERED SUBSIDIARY TO THAT ITEM WHICH IT SUPPORTS.
29. PRIOR TO FILLING WINDSLOTS, THE ASPHALTIC ASBESTOS COATING SHALL BE REMOVED FROM WINDSLOT AREA. THIS WORK SHALL BE PAID FOR UNDER ITEM 529.10, 'REMOVAL OF BRIDGE PAVEMENT'.
30. CONCRETE FILL HOLES DRILLED THROUGH THE TOP OF CURB/ SIDEWALK TO THE WINDSLOT VOID SHALL BE A MINIMUM OF FOUR (4) INCHES IN DIAMETER. THEY SHALL BE BORED USING A ROTARY, NON-IMPACT DRILL. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM 501.21, 'CONCRETE, CLASS AA'. ALTERNATE METHODS FOR FILLING WINDSLOTS MAY BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE RESIDENT ENGINEER.
31. IF THE ENGINEER DETERMINES THAT TWO-WAY TRAFFIC CANNOT EXIST DURING NON-WORKING HOURS, HE SHALL AUTHORIZE AND UTILIZE FLAGGERS TO MAINTAIN ONE-WAY TRAFFIC UNTIL THE ENGINEER DEEMS OTHERWISE. DURING NIGHT-TIME OPERATIONS, THE FLAGGERS SHALL BE ILLUMINATED AS NOTED IN SUBSECTION 630.02. ANY SIGNS, LIGHTS, EQUIPMENT, MATERIALS, AND LABOR NECESSARY TO PROVIDE THE NECESSARY ILLUMINATION AND ADVANCE WARNING SHALL BE INCLUDED IN THE UNIT PRICE OF ITEM 630.15, 'FLAGGERS'.
32. MEMBRANE INFORMATION:
- A. TRAFFIC SHALL BE MAINTAINED AT ALL TIMES AS SPECIFIED UNDER THE TRAFFIC CONTROL PLAN.
- B. BEFORE APPLYING THE SHEET MEMBRANE WATERPROOFING, THE DECK SURFACE SHALL BE MADE SMOOTH TO THE SATISFACTION OF THE ENGINEER, USING ONE OR BOTH OF THE FOLLOWING METHODS:
- (1) FILL IN ALL POCK MARKS, GOUGES OR OTHER DEPRESSIONS WITH QUICK SET CEMENT UNDER THE ITEM 501.52, 'CONCRETE, CLASS AA, QUICK SETTING' (C.F.). CONTACT VERMONT AGENCY OF TRANSPORTATION MATERIALS DIVISION TO OBTAIN A LIST OF ACCEPTABLE MATERIALS FOR 'CONCRETE, CLASS AA, QUICK SETTING'.
- (2) GRIND SMOOTH ALL ROUGH AREAS, RIDGES, OR OTHER HIGH SPOTS UNDER THE ITEM 'SURFACE PREPARATION FOR MEMBRANE'.
- C. THE MEMBRANE IS TO BE INSTALLED ACCORDING TO THE SPECIFICATIONS CALLED FOR UNDER ITEM 519. SINCE THE DECK CANNOT BE WATERPROOFED AND PAVED IN A CONTINUOUS OPERATION, THE MEMBRANE SHALL EXTEND BEYOND THE LANE LINE SO THAT THE MEMBRANE CAN BE TIED INTO AFTER THE TRAFFIC HAS BEEN SHIFTED OVER TO THE COMPLETED LANE OR CONSTRUCTION OPERATIONS HAVE BEEN RESUMED. ANY PART OF THE MEMBRANE THAT EXTENDS BEYOND THE NECESSARY LANE WIDTH TO MAINTAIN TRAFFIC SHALL BE COVERED WITH RELEASE PAPER AND BITUMINOUS CONCRETE. ANY REMOVAL OF THIS BITUMINOUS CONCRETE SHALL BE SUBSIDIARY TO THE ITEM 'BITUMINOUS CONCRETE PAVEMENT'. AT LEAST THE FIRST LIFT OF PAVEMENT SHALL BE PLACED ON THE NEWLY INSTALLED MEMBRANE FOR THE ENTIRE LENGTH OF THE BRIDGE, PRIOR TO ROUTING TRAFFIC ONTO THIS LANE. NOTE THAT THERE ARE TWO LIFTS OF BITUMINOUS CONCRETE PAVEMENT, AND THE LONGITUDINAL JOINTS SHALL BE OFFSET A MINIMUM OF 6 INCHES.
33. OVERLAY INFORMATION: IF, UPON REMOVAL OF THE PAVEMENT AND MARKING OF AREAS NEEDING REPAIR ON THE DECK, THE ENGINEER DETERMINES THAT AN OVERLAY IS DESIRED, THEN THE FOLLOWING NOTES SHALL APPLY AND PRICES FOR 501.45 (MOD.), AND 501.46 (MOD.), SHALL BE 90% OF THE BID PRICE FOR THAT BRIDGE.
- A. THE OVERLAY SHALL BE 'CONCRETE, CLASS AA', TWO (2) INCHES IN DEPTH, AND MATCHING THE EXISTING CROSS SECTION. SEE SECTION 501 FOR FURTHER DETAILS ON PLACEMENT, CURING, AND TRAFFIC. IF FINISH GRADE OF NEW OVERLAY IS HIGHER THAN OLD GRADE, TRANSITION SHIMS OF BITUMINOUS CONCRETE SHALL BE PAVED AS DIRECTED BY THE ENGINEER. ALL WORK INCLUDED IN THE CONSTRUCTION OF THESE SHIMS SHALL BE PAID UNDER ITEM 406.25, 'BITUMINOUS CONCRETE PAVEMENT'. CONCRETE SHALL BE CURED IN ACCORDANCE WITH SECTION 501.17a AND 501.17b EXCEPT PARAGRAPH 6 WILL NOT BE ALLOWED FOR OVERLAYS.
- B. REMOVAL AND REPLACEMENT OF THE CONCRETE SHALL BE PAID AS ITEM 501.45 (MOD.), ITEM 501.46 (MOD.), OR ITEM 529.25 (MOD.) AS DETERMINED BY THE ENGINEER. SEE GENERAL NOTES NO. 13 AND NO. 16 AND SECTIONS 501.19 AND 501.20. ALL AREAS WITH A HALF CELL POTENTIAL OF 0.40 OR GREATER SHALL BE REMOVED AS ITEM 501.46 (MOD.) OR 529.25 (MOD.).
- C. CONTRACTOR MAY USE A SCARIFIER OR PLANER TO REMOVE CONCRETE TO WITHIN ONE HALF (1/2) INCH OF THE TOP MAT OF REINFORCING STEEL. THIS IS TO PREVENT MACHINE FROM GETTING ENTANGLED IN THE REBAR. IF A GRINDING MACHINE IS USED, THE GRINDINGS SHALL BE DISPOSED OF IN ACCORDANCE WITH SUBSECTIONS 105.24 AND 105.25.
- D. AFTER COMPLETION OF CONCRETE REMOVAL, ALL DECK SURFACE AND ALL EXPOSED STEEL WHICH WILL HAVE CONCRETE PLACED AGAINST OR AROUND IT (I.E., METAL PLATE EXPANSION JOINTS, SCUPPERS, FINGER PLATE EXPANSION JOINTS, REINFORCING STEEL, ETC.), SHALL BE SANDBLASTED A MAXIMUM OF 24 HOURS PRIOR TO PLACING THE NEW CONCRETE. THE AREA SHALL BE VACUUMED OR FLUSHED, USING HIGH PRESSURE AIR OR WATER TO REMOVE ALL LOOSE PARTICLES, DUST AND DEBRIS. AFTER SANDBLASTING, ONCE THE CONCRETE IS WET, WHETHER FROM FLUSHING OR RAIN, THE CONCRETE MUST BE KEPT WET UNTIL THE PLACING OF NEAT CEMENT, AND PLACING THE OVERLAY (WHICH SHALL BE CONCURRENT). IF THE CONCRETE IS ALLOWED TO DRY OUT, THE AREA MUST BE SANDBLASTED AGAIN AND THE ENTIRE AREA VACUUMED OR FLUSHED AGAIN. THIS WORK SHALL BE SUBSIDIARY TO ITEMS 501.45 (MOD.) AND 501.46 (MOD.), OR 529.25 (MOD.).
- E. EPOXY BONDING COMPOUND SHALL BE APPLIED TO THE LONGITUDINAL JOINT PRIOR TO PLACEMENT OF SECOND LANE OVERLAY. PAYMENT FOR THIS WORK SHALL BE PAID UNDER ITEM 530.25, 'EPOXY BONDING COMPOUND'.
34. THE COST OF FLUSHING FABRIC TROUGHS, METAL TROUGHS, AND DOWNSPOUTS SHALL BE SUBSIDIARY TO ALL OTHER ITEMS IN THE CONTRACT.
35. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE SUPERSTRUCTURE EXCEPT THE BOTTOM OF THE DECK BETWEEN THE DRIP BEADS. IT SHALL ALSO BE APPLIED TO THE EXPOSED CONCRETE ON ABUTMENTS AND WINGWALLS BUT NOT ON PIER CAPS OR COLUMNS.
36. IT IS THE RESPONSIBILITY OF THE CONTRACTOR, PRIOR TO WORKING IN ANY AREA, TO DETERMINE IF THERE ARE ANY UTILITY FACILITIES, PARTICULARLY UNDERGROUND, THAT MIGHT BE SUBJECT TO DISTURBANCE BY CONSTRUCTION ACTIVITY. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY SUCH UTILITY COMPANY, AT LEAST FIVE WORKING DAYS PRIOR TO STARTING WORK; KEEP THEM INFORMED OF HIS ACTIVITIES; AND ARRANGE FOR ANY ADJUSTMENTS THAT MAY BE NECESSARY. ANY AND ALL ADJUSTMENTS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER.
- THERE WILL BE NO EXTRA COMPENSATION PAID TO THE HIGHWAY CONTRACTOR FOR ANY INCONVENIENCE CAUSED BY WORKING AROUND AND WITH THE UTILITY COMPANIES AND THEIR FACILITIES.
37. FOLLOWING PAVING, ANY BITUMINOUS CONCRETE PAVEMENT THAT BECOMES LODGED IN THE EXPANSION JOINTS OR ENTERS DRAIN TROUGHS, SCUPPERS, OR DOWNSPOUTS WILL BE REMOVED BY THE CONTRACTOR AT NO COST TO THE STATE.
38. HYDRO-DEMOLITION WILL BE AN ACCEPTABLE METHOD OF REMOVING CONCRETE FOR THE WORK REQUIRED UNDER GENERAL NOTES NO. 12 AND NO. 33. THE SLURRY GENERATED FROM THIS OPERATION SHALL BE DISPOSED OF IN ACCORDANCE WITH SUBSECTIONS 105.24 AND 105.25.

STATE OF VERMONT AGENCY OF TRANSPORTATION			
Town Of LUDLOW-MT. HOLLY	Bridge No. _____	Log Sta. _____	Surv. Sta. _____
Highway No. VT.100 & VT.103			
DECK REHABILITATION GENERAL			
NOTES			
Designed By G.S. ROGERS	Drawn By D.W. NEWTON		
Checked By G.S. ROGERS	Date 6/87	Bridge Design Supervisor R.L. OATLEY	
PROJECT LUDLOW-MT HOLLY		PROJECT NO. F- DECK (22) S	
L&C. Info. 3FA1130,321 DECKNOTE 2			
Bridge Sheet No. _____		Sheet 25 of 40	

ONE-WAY
TEMPORARY
TRAFFIC SIGNAL
(WITH FLASHING BEACON)

PREPARED BY LKA / SM DATE 6/27/97
CHECKED BY DSP DATE 2/87
DESIGN SUPERVISOR _____ DATE _____
PROJ. LUDLOW - MT. HOLLY
F DECK (22) S

TRAFFIC SHEET NO. 1 OF 4
SHEET 9 OF 40 SHEETS



Engineer shall verify location of islands by survey, prior to removal, for replacement. Island locations shown are approximate.

Following completion of the deck repair all islands shall be replaced/restored to their original locations & equal or better condition.

See traffic sheet 1 for additional information on signs, pavement markings and signals

Installation and removal of temporary signal signing, pavement markings, traffic signal equipment & luminaires shall be included in item 678.15(mod). The temporary loops shall be paid as item 678.22(mod).

Removal of permanent pavement markings shall be subsidiary to 678.15(mod). Removal of permanent signs and posts shall be subsidiary to 527.10. Reinstallation of permanent pavement markings, signs and posts shall be paid as items 646.21, 646.31, 646.40, 646.44, 646.50, 646.51, 646.60, 646.64, 675.20 & 675.30

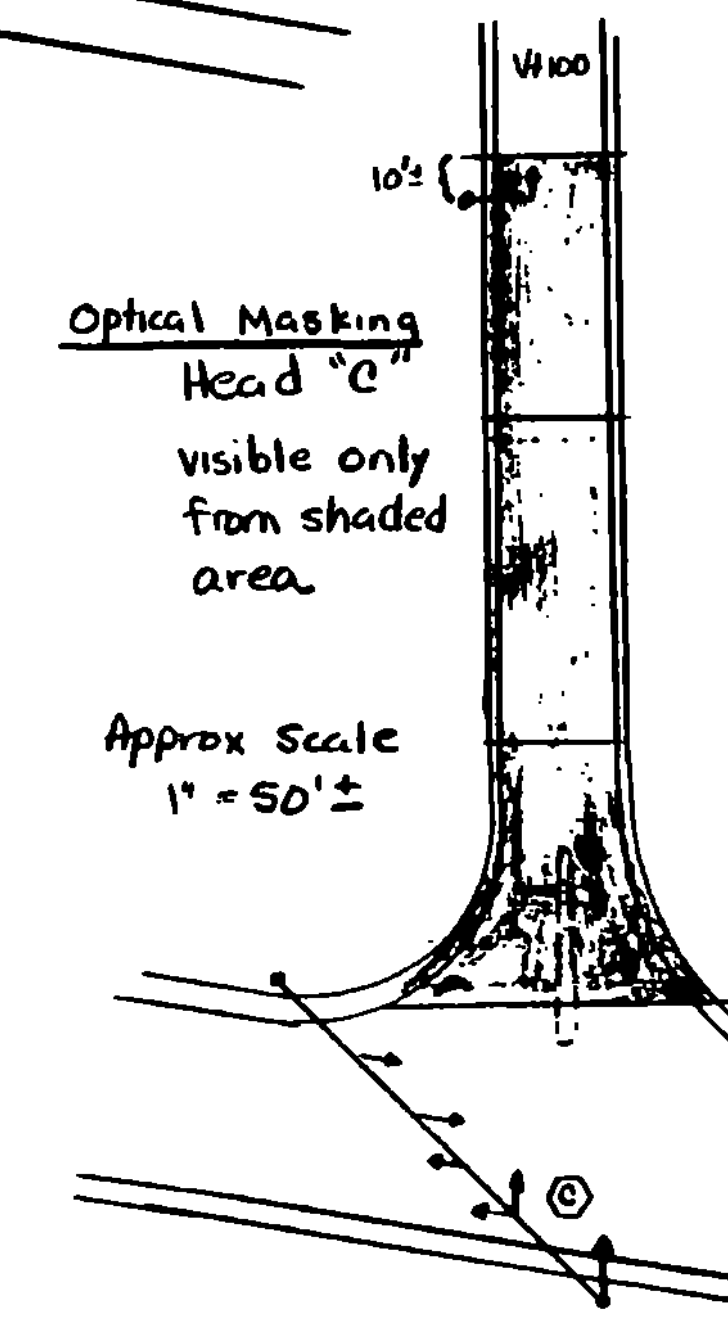
SIGNAL PHASING DIAGRAM

PHASE	A (Dwell)			B			C		
INTERVAL	1	2	3	4	5	6	7	8	
MINIMUM	-	-	-	12	-	-	-	-	-
EXTENSION	-	-	-	2	-	-	-	-	-
MAXIMUM	25	3	17	25	3	-	11	3	3
HEAD A	G	Y	R	R	R	-	R	R	R
HEAD B	R	R	R	G	Y	-	R	R	R
HEAD C	R	R	R	G	G	-	G	Y	R

Temporary Traffic Signal Notes - Ludlow BR99

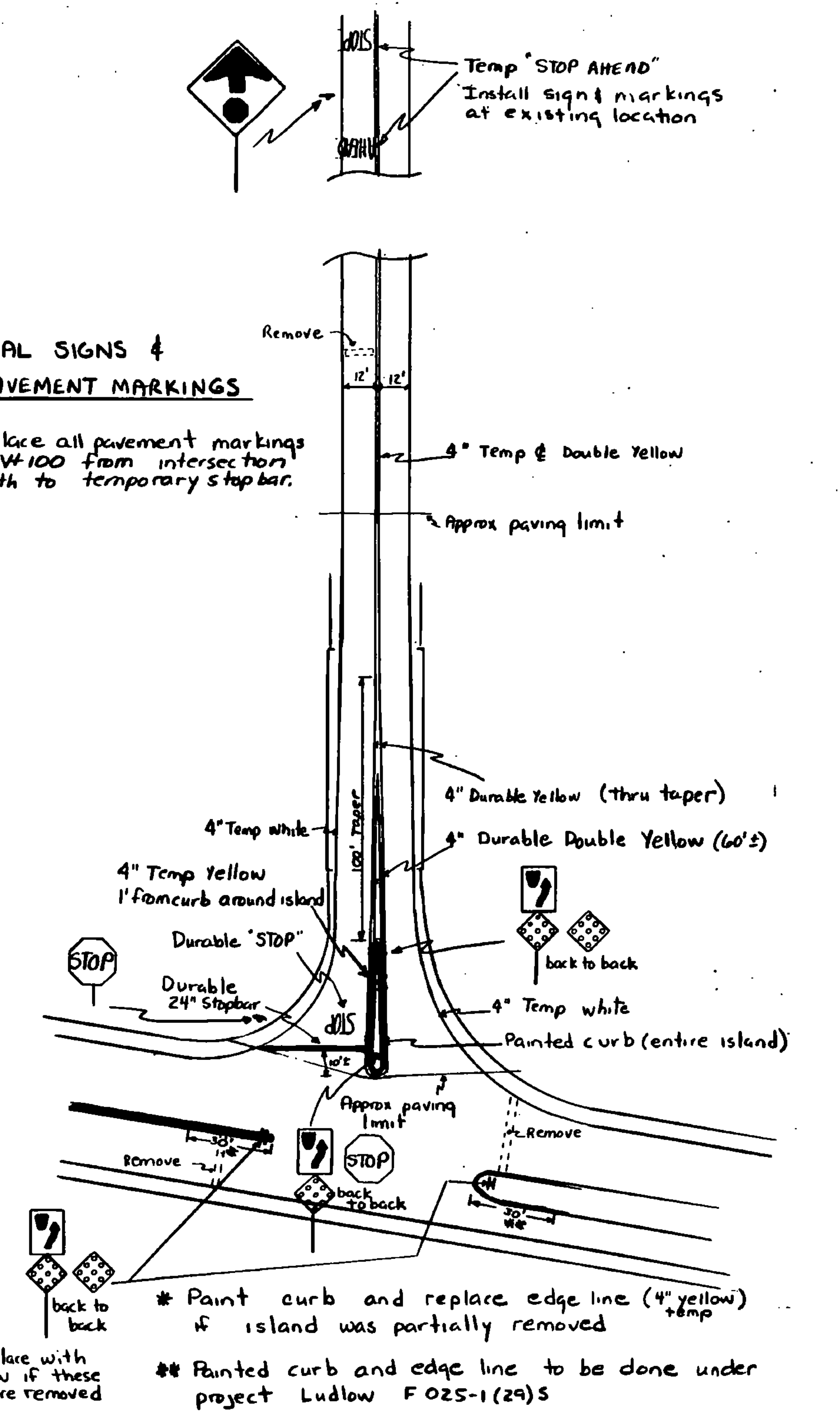
In addition to the notes on traffic sheet 1, the following apply to this location only.

- Use mercury luminaires only
- Traffic signal heads "C" shall be optically programmed and masked as shown at right.
- The signal shall be semi-actuated with the loop placed on Vt100 SB as shown.
- The span wire across Vt103 shall be installed as far to the east as possible without conflicting with the existing aerial utility lines or luminaire.



FINAL SIGNS & PAVEMENT MARKINGS

Replace all pavement markings on Vt100 from intersection north to temporary stop bar.



ONE-WAY TEMPORARY TRAFFIC SIGNAL DETAIL BRIDGE NO. 99 LUDLOW	PREPARED BY LKA DATE 1/87 CHECKED BY DATE LUDLOW - MT HOLLY PROJ. F-DEZNO. (23)S
	TRAFFIC SHEET NO. 2 SHEET 10 OF 54
	1988

TRAFFIC SIGN SUMMARY SHEET

1986

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS	EXISTING SIGNS			NEW AND SALVAGED SIGNS				EXISTING POSTS				NEW SIGN POSTS														REMARKS	FOR SIGN DETAIL SHEET		
			TO BE SALV.	REMOVE	REPLACE	"A"	"B"	SALV. SIGN	SALV. T.I.S.	RET.	DRILL	REM.	SALV.	NUMBER OF POSTS	FLANGED CHANNEL LB./FT.			TUBULAR ALUMINUM				TUBULAR STEEL				W SHAPED STEEL			PLAN SHEET NUMBER	STD. SHEET NUMBER	
															2.0	2.5	3.0	3.0"Ø	3.0"□	4.0"Ø	4.0"ØM.	3"Ø	3.5"Ø	4.0"Ø	5.0"Ø	POST SIZE	WEIGHT				FTG. SIZE 24"
1	V+100		36" x 36"				9.0							1			X												Place at same location as removed sign		E-19
2	V+100 No end of island		24" x 30" 2 @ 18" x 18"				5.0 4.5							1		X														E-15B E-19-B	
3	V+100 So end of island	 	24" x 30" 18" x 18" 30" x 30"				5.0 2.25 6.25							1		X													Install back to back		E-15B E-19-B E-15C
4	V+100		30" x 30"				6.25							1		X														E-15C	
5	V+103 W		24" x 30" 2 @ 18" x 18"				5.0 4.5							1		X													Install only if existing were removed to provide turning radius		E-15B E-19B
6	V+103 E		24" x 30" 2 @ 18" x 18"				5.0 4.5							1		X													"		E-15B E-19B
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE DESIGN DIVISION'S "SIGN POST DESIGN MANUAL".			TOTALS			EA.	SF.	SF.	EA.	SF.					203 lbs																

TRAFFIC ITEM SUMMARY

ITEM NO.	ITEM	UNIT	QUANTITY	RNDG.	TOTAL
203.17	Unclassified Excavation	CY	11.7	8.3	20
301.15	Subbase of Gravel	CY	9.8	.2	10
406.25	Bituminous Concrete Pavement	TON	35.5	.5	36
616.40	Removing & Resetting Curb	LF	175	5	180
630.10	Uniformed Traffic Officer	HR	10	-	10 EST
646.21	Painted Curb	LF	180	-	180
646.31	Durable 4" Yellow Line	LF	320	-	320
646.40	Durable 24" Stopbar	LF	40	-	40
646.44	Durable Letter in Word Marking	EA	4	-	4
646.50	Temporary 4" White Line	LF	610	520	1150
646.51	Temporary 4" Yellow Line	LF	1220	680	1900
646.60	Temporary 24" Stopbar	LF	40	-	40
646.64	Temporary Letter in Word Marking	EA	9	-	9
675.20	Traffic Signs, Type A	SF	5725	2.75	60
675.30	Flanged Channel Sign Posts	LB	203	2	205
678.15(mod)	Traffic Control Signal (Temporary)	EA	1	1	2
678.22(mod)	Vehicle Loop Detector (Temporary)	LF	110	75	185

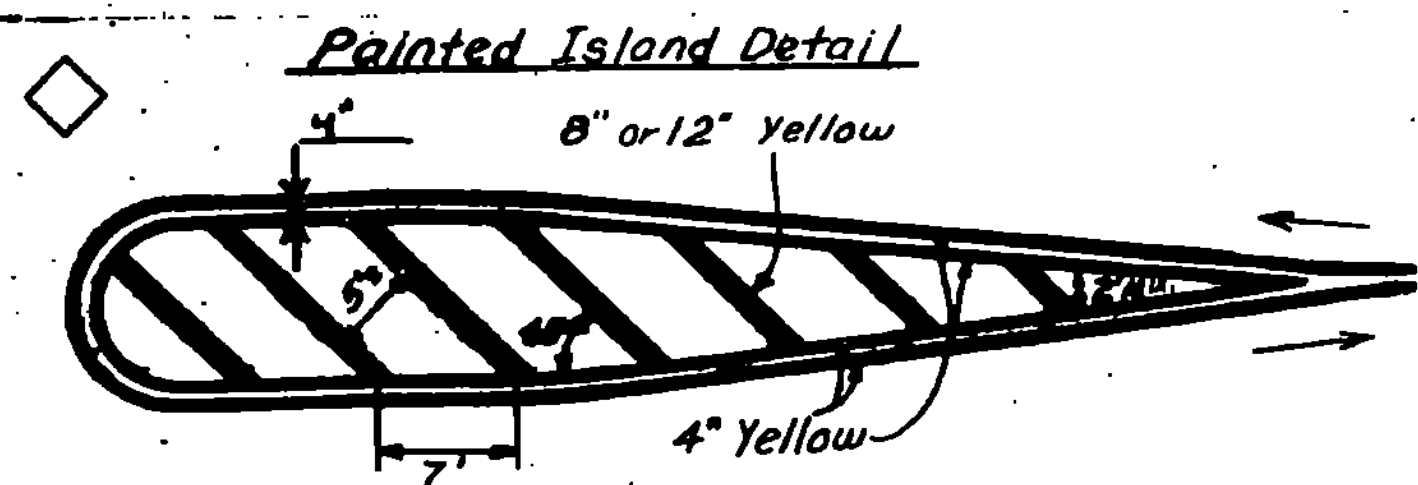
NOTES AND DETAILS

Quantities assume total removal and replacement of the V+100 island & partial removal and replacement of the two V+103 islands. Topsoil, seeding & mulching of the V+103E island shall be subsidiary. Pavement quantity includes the V+100 & V+103W islands and roadway from the south end of the bridge to the south end of the V+100 island.

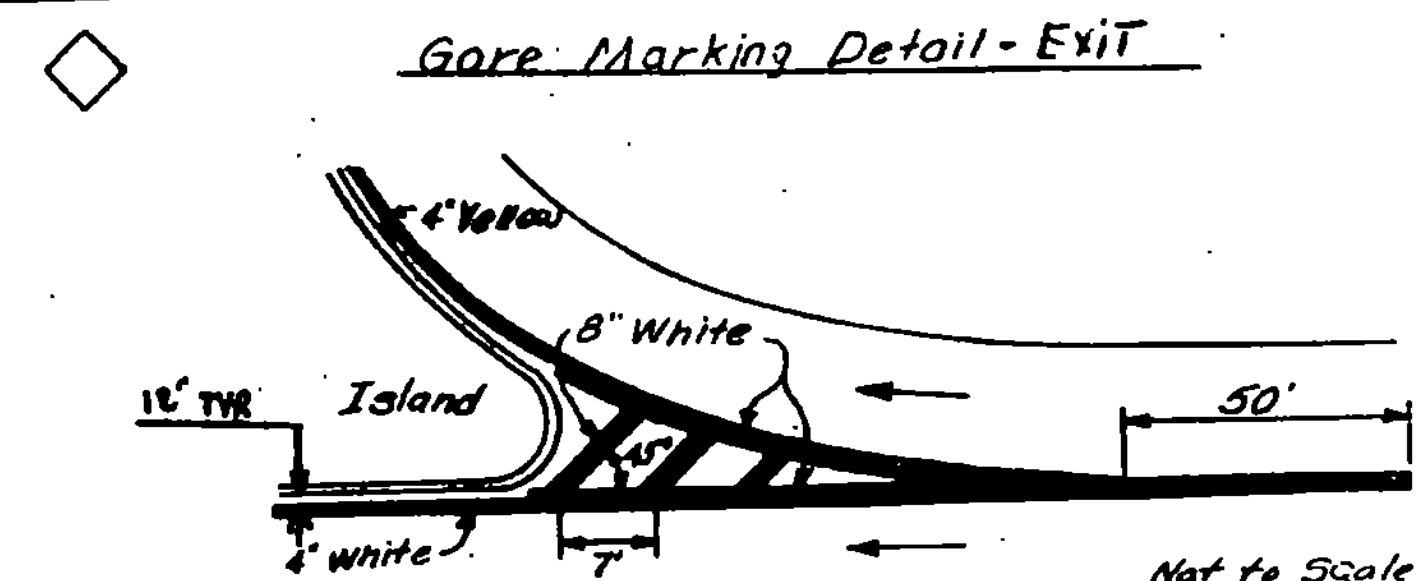
- 1) An estimated quantity of 10 hours of U.T.O. is included to be used, as necessary, during the installation and removal of the span wire and signals across V+103.
- 2) Pavement marking quantities reflect 1 application of edges lines and letters and 2 applications of centerline and final stopbar (1 temp & 1 durable where final markings are durable).
- 3) A flashing beacon (temporary) will be installed by the eastbound lane approaching the project area. See Traffic Sheet #1 for details. Payment for Flashing Beacon to be subsidiary to Traffic Control Signal (Temporary), Item 678.15 (Mod.) This applies to Bridge #33 only.

TRAFFIC SIGN
SUMMARY SHEET
4
NOTES

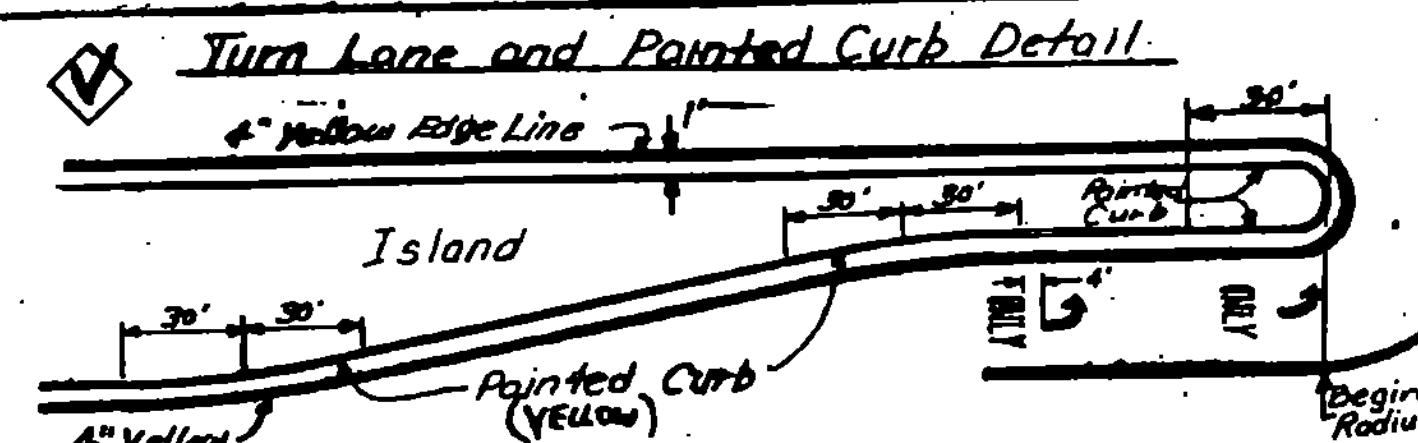
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CHECKED BY _____ DATE _____
DESIGN SUPERVISOR _____ DATE _____
PROJ. _____
TRAFFIC SHEET NO. 3 OF 4
SHEET 11 OF 40 SHEETS



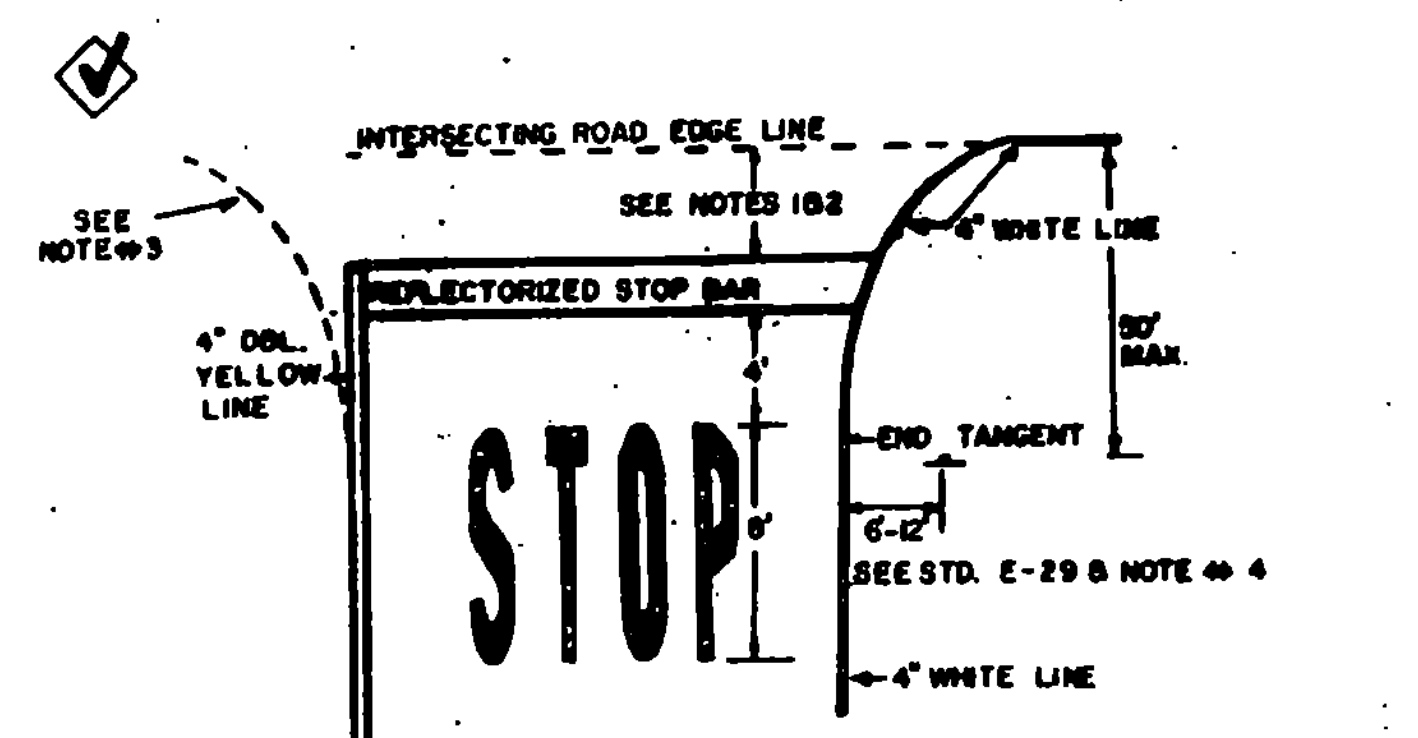
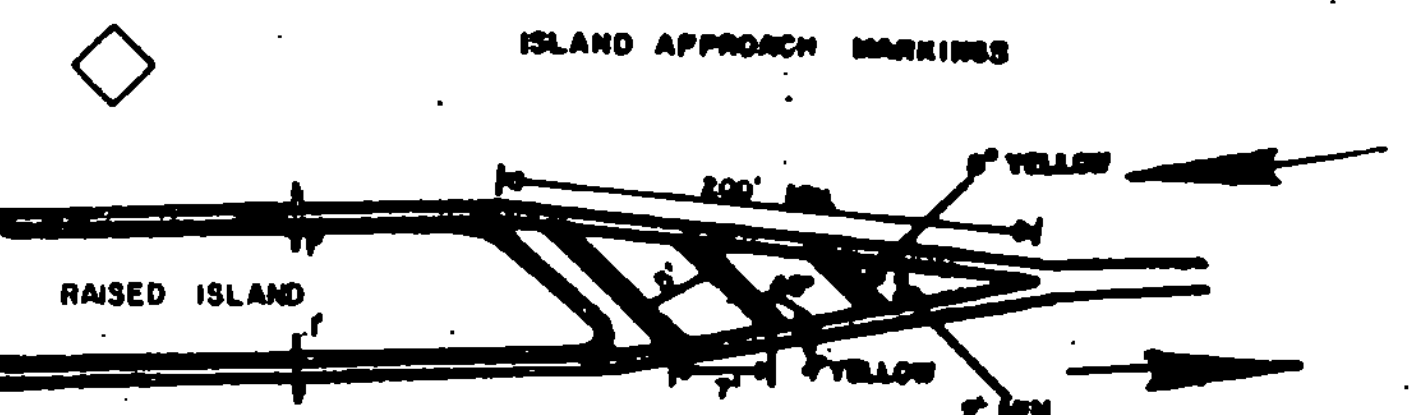
Not to Scale



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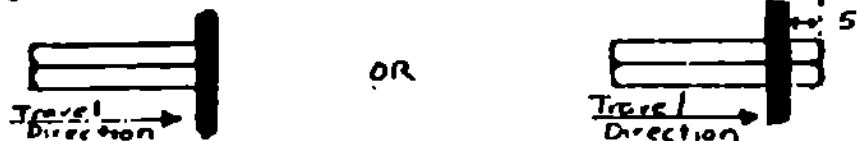
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1. THE STOP LINE SHOULD BE PLACED AT THE DESIRED STOPPING POINT. IN NO CASE MORE THAN 30' OR LESS THAN 4' FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY.
2. WHEN A TRAFFIC SIGNAL IS PRESENT, DELETE WORDING "STOP" AND PLACE STOP BAR A MINIMUM OF 40' FROM THE NEAREST SIGNAL HEAD.
3. ON ONE-WAY RAMP THE 4" DOUBLE YELLOW CENTERLINE SHALL BE REPLACED WITH A 4" SINGLE YELLOW EDGE LINE.
4. ON ONE-WAY RAMP THE STOP SIGN SHALL BE REPLACED WITH A TYPE "R" ASSEMBLY ON EACH SIDE OF THE RAMP. A TYPE "A" ASSEMBLY CONSIST OF A STOP SIGN, A "DO NOT ENTER" SIGN AND TWO "ONE WAY" SIGNS.

APPLICATION NOTES

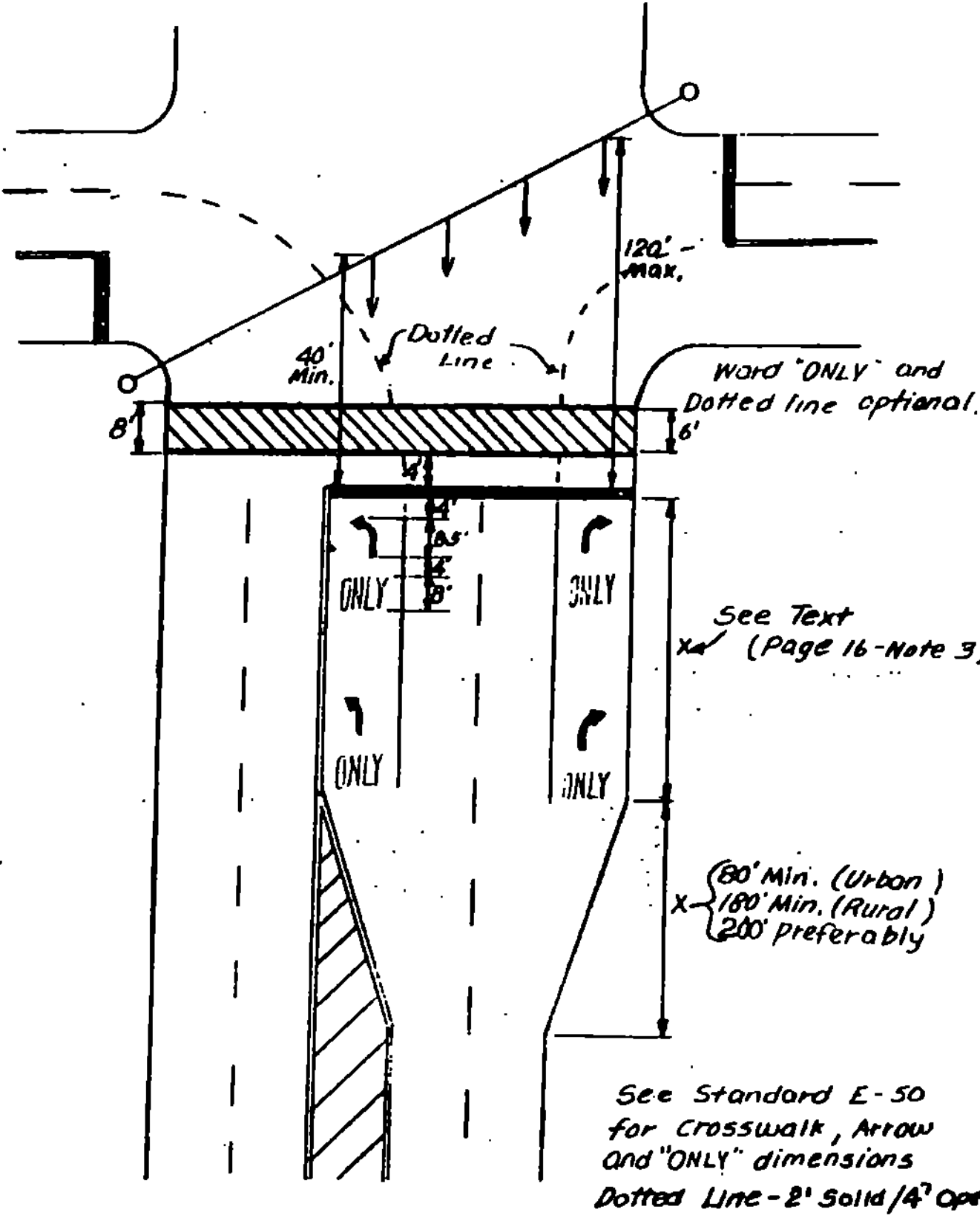
1. Edge lines shall be placed 1'-0" from curb, minimum.
2. Lane widths based on available roadway width. Preference shall be given to thru lanes with a preferred width of 12'. Left and right turn lanes may be between 10'-12' in width.
3. Exclusive turn lanes (left or right) - Turn lane lanes shall be solid and extend back from the stopbar an adequate distance to store turning vehicles. Generally, the line will extend back to the point of full lane width. The edge line taper rate should be 50:1 (minimum). In urban areas an 80' minimum is required. In both rural and urban areas a 200' taper is desirable. An estimate of length required can be determined by dividing the average hourly turning volume by the number of cycles per hour. Multiply the result by 25' per vehicle and then multiply by 1.5 to 2.0. Existing geometry may restrict turn lane length.
4. Turn arrows shall be placed at the begin and end of the left or right turn lane and in the middle if the lane length exceeds 200'.
5. Turn arrows placed at the end of the lane with the stop bar shall be placed with a 4' gap between the stop bar and arrow.
6. There shall be a 4' gap between turn arrows and word markings.
7. When word markings are used at the beginning of a turn lane the markings shall begin at the start of the solid white lane line.
8. The word marking STOP shall be placed with a 4' gap between the marking and the stop bar.
9. Gore markings shown are only approximate. Marking shall be as detailed on Standard Sheet E-50.
10. Stopbars shall be located no closer than 40' from the nearest signal face and no further than 120' from the furthest face. At intersections where there are existing vehicle detector loops, care should be taken in locating the stop bar. In most cases the stopbar should be at or just behind the front edge of the loop.
11. Dotted line extensions (lane lines and/or centerline) may be used at some intersections to emphasize turning paths.
12. When two line text is used for pavement markings (Signal Ahead, etc.) the two words shall read up and have a space of 32' between them. The corresponding sign shall be half way between the words.



If loop locations are not known, contact either the Maintenance Division or Traffic Design for information.

Revision - 11/84
Note 3 revised
Notes 10 & 11 added
Note 12 added 8/85

Typical Markings For Signalized Intersection



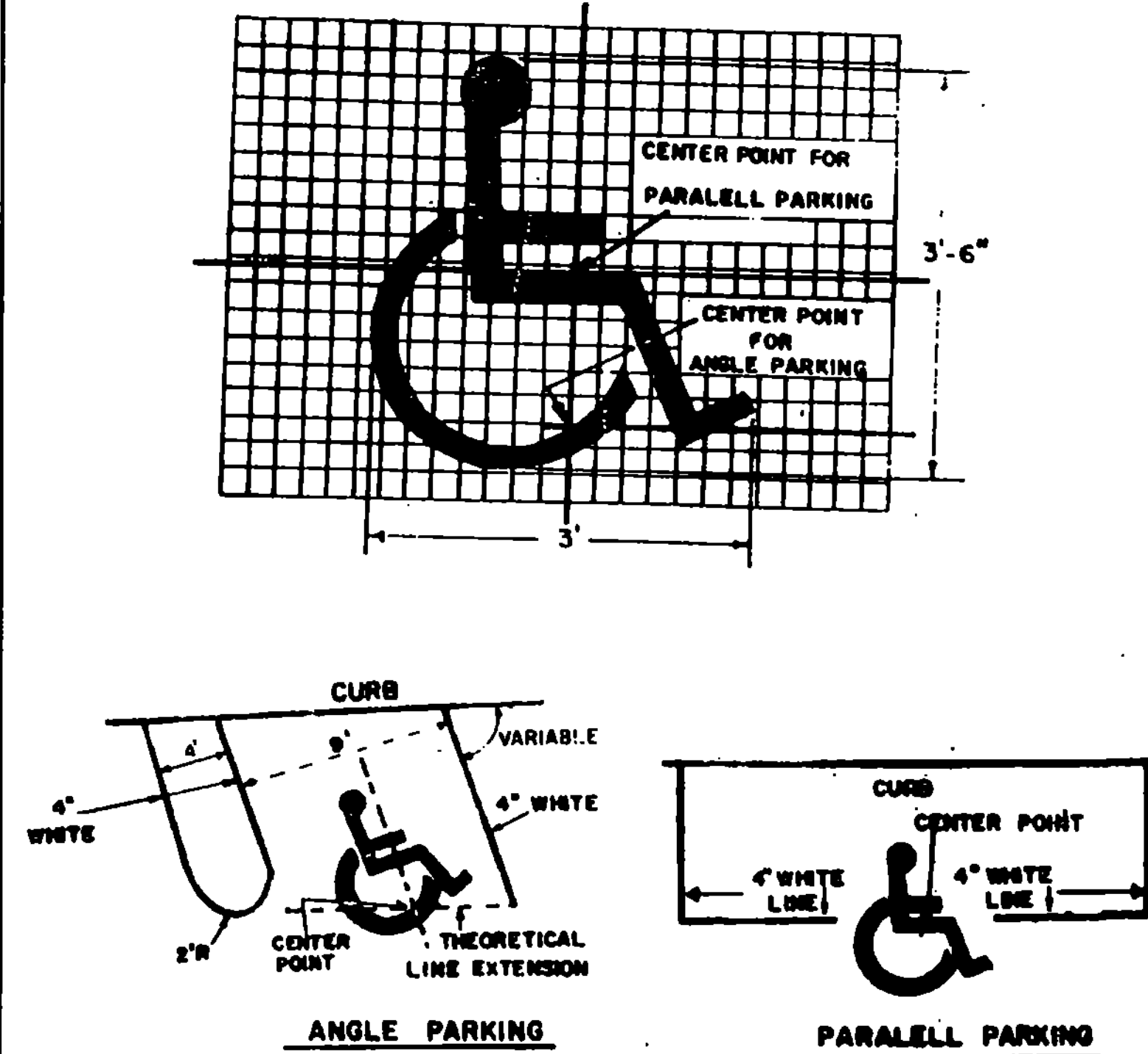
See Standard E-50 for Crosswalk, Arrow and "ONLY" dimensions
Dotted Line - 2' Solid / 4' Open

GUIDELINES FOR MINIMUM INTERIM PAVEMENT MARKINGS IN CONSTRUCTION ZONES

- A. CENTERLINE AND GORE AREA MARKINGS SHALL BE APPLIED AT THE END OF EACH WORKING DAY. THE FOLLOWING LAYOUT REQUIREMENTS SHALL BE MET:
NO PASSING BARRIER
SOLID STRIPES.
DASHED LINE
10-FOOT SOLID LINE WITH 30-FOOT GAP.
GORE AREA
(GORE AREAS TO INCLUDE 8' CHANNELIZING LINE AND DASHED LINE) PER STANDARD SHEET E-50
- B. **EDGE LINES**
WHEN SPECIFIED, EDGE LINES ARE NOT REQUIRED UNTIL COMPLETION OF THE PROJECT. ON INTERSTATE PROJECTS, TEMPORARY EDGE LINES SHOULD BE APPLIED WHERE TRAFFIC VOLUMES AND SPEEDS ARE HIGH AND DELAY OF SEVERAL DAYS IS ANTICIPATED.
- C. TEMPORARY MARKINGS MAY CONSIST OF PAINT, TAPE OR RAISED PAVEMENT MARKERS (RPM'S). THE TAPE SHALL BE A RETRO-REFLECTIVE FILM ON A CONFORMABLE METALLIC BACKING THAT CAN BE PAVED OVER. TAPE MAY BE USED ON THE FINAL SURFACE COURSE IF IT WILL NOT INTERFERE WITH THE FINAL MARKING APPLICATION. TEMPORARY TAPE MARKINGS WILL BE OFFSET AND REMOVED WHEN PROJECT IS FINISHED AND FINAL CENTERLINE PAINTED. THE TAPE SHALL BE THE TYPE THAT IS REMOVABLE INTACT AND NOT SEPARATE AT ANY TIME. THE RPM'S SHALL HAVE A SELF-ADHESIVE BACKING EASILY REMOVED BEFORE PAVING AND SHALL CONFORM TO THE FOLLOWING LAYOUT PATTERN:
NO PASSING BARRIER
NO RPM'S ALLOWED.
DASHED LINE
FOUR RETRO-REFLECTIVE RPM'S ON 3 1/2 FOOT CENTERS WITH A 30' GAP.
SOLID LINE - EDGE LINES
INTERSTATE MEDIAN SIDE-RETRO-REFLECTIVE RPM'S ON 4 TO 5 FOOT CENTER. DRIVERS RIGHT SIDE-RPM'S NOT ALLOWED.
- D. WHEN PAINT IS USED FOR TEMPORARY MARKING, AN ALTERNATE MATERIAL SUCH AS TAPE OR RPM'S SHALL BE ON HAND IN THE EVENT RAIN PREVENTS THE PAINT APPLICATION FROM BEING COMPLETED. ALL PAINT SHALL BE REFLECTORIZED.
- E. PAYMENT FOR PAINT AND TAPE SHALL BE COMPUTED ON A LINEAR FOOT BASIS AS IF PAINT WAS USED. PAYMENT FOR THE RPM'S SHALL BE COMPUTED AS IF AN EQUIVALENT PAINT LINE WAS USED. (FOR EXAMPLE, DASHED LINE PAID AS 10 FEET OF PAINT, SOLID LINE PAID AS THE TOTAL DISTANCE COVERED WITH THE MARKERS).
- F. PRIOR TO ACCEPTANCE, THE PAVEMENT MARKINGS SHALL BE COMPLETED FOR THE ENTIRE PROJECT BY THE CONTRACTOR AS DETAILED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER.

REVISED
02/11/85

HANDICAPPED PAVEMENT MARKING DETAILS



LEGEND

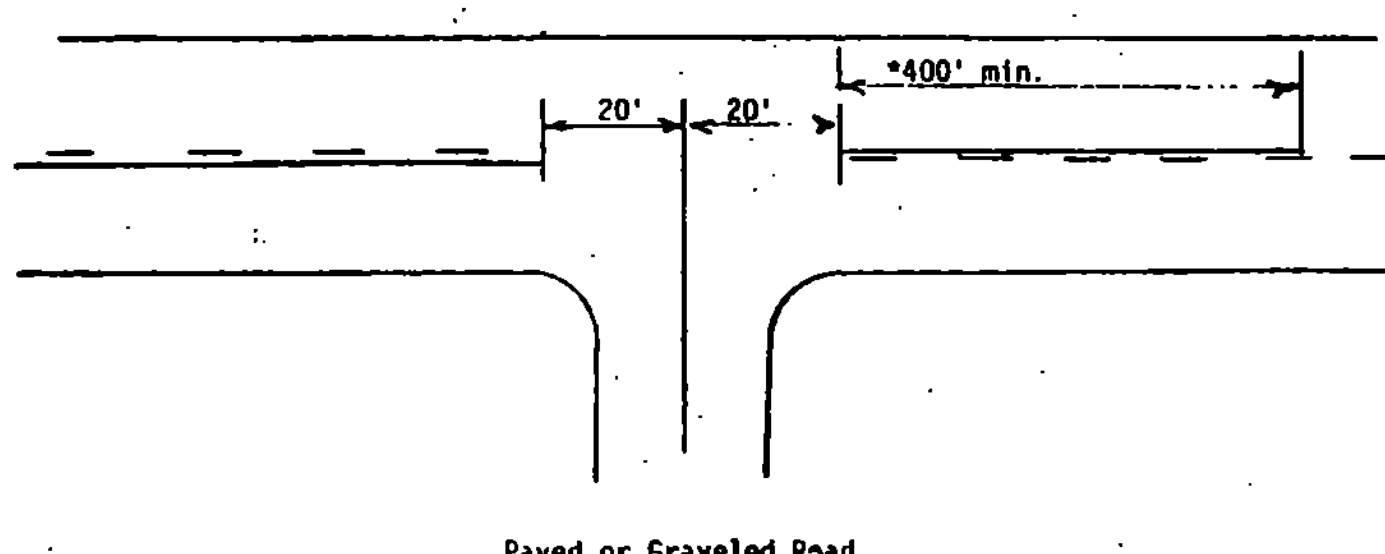
TO BE USED WITH THIS PROJECT

PAVEMENT MARKING DETAILS

SURVEYED BY _____ DATE _____
DRAWN BY _____ DATE _____
TRACED BY _____ DATE _____
LUDLOW - MTHOLLY
PROJ. F DECK NO. (22) 5
TRAFFIC SHEET NO. 4 SHEET 12 OF 40

APPROACH TO A SIDE ROAD INTERSECTION

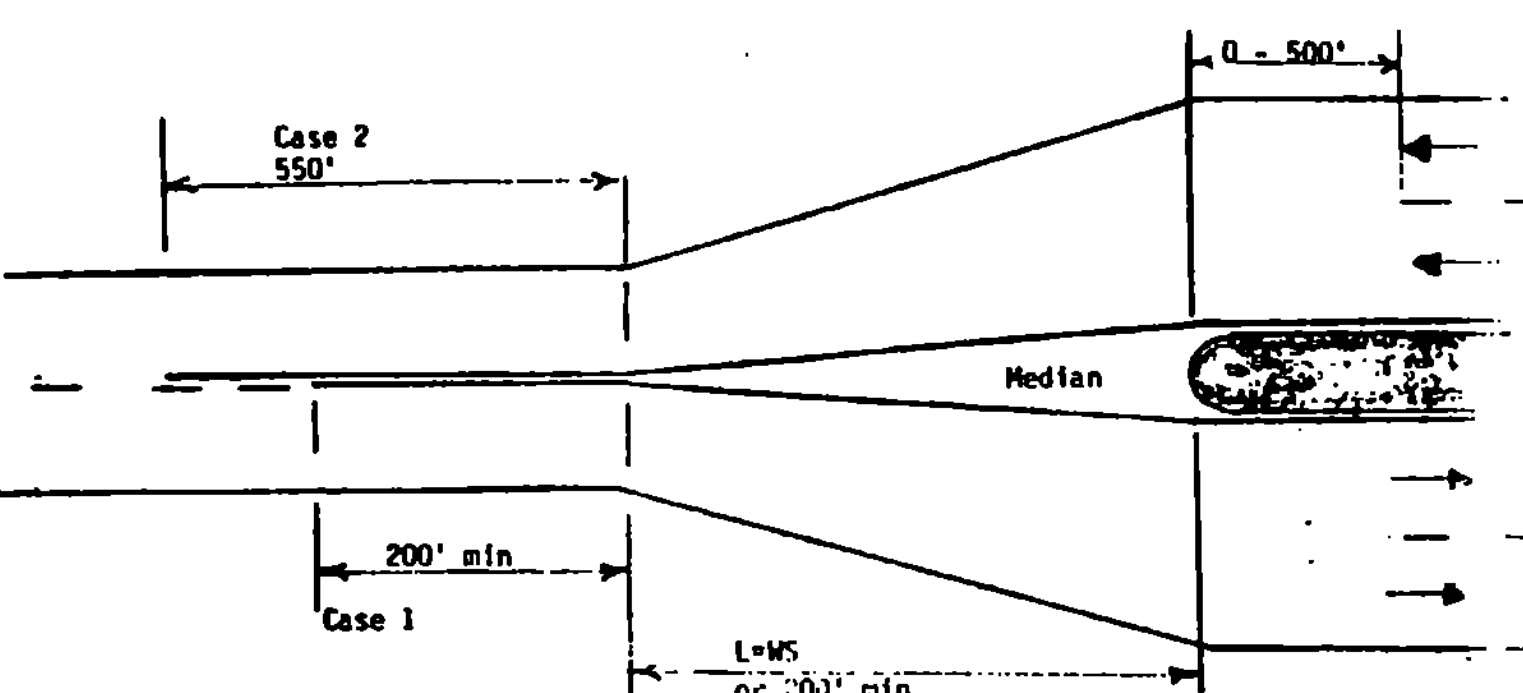
A solid line in the direction of travel is begun at a location 400 feet in advance of the intersection. This distance is measured from a point 20 feet in advance of the centerline of the intersecting roadway.



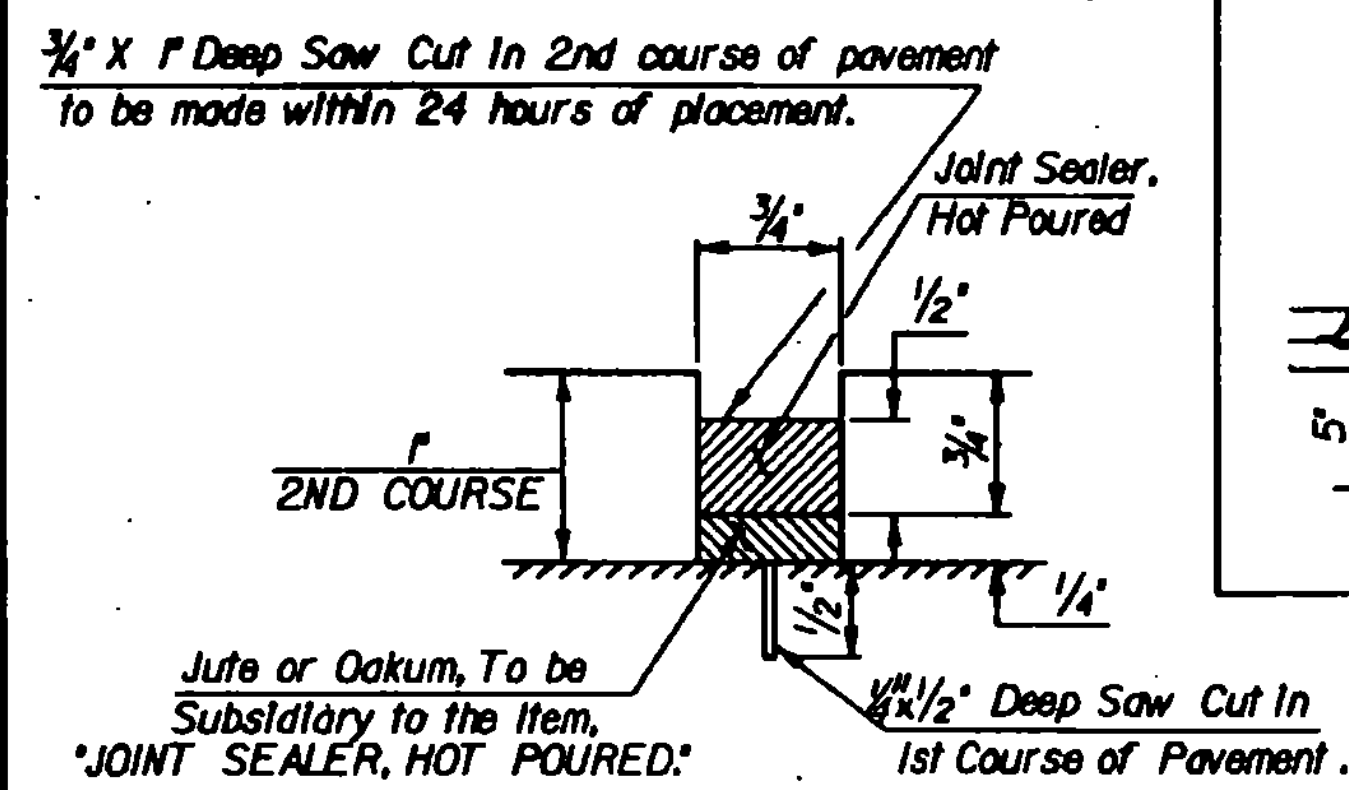
* Centerline treatment shall consist of a minimum of 400 feet of solid line in advance of the intersection and shall be paired with either a solid or dashed line depending on sight distance availability in the opposing lane.

PAVEMENT WIDTH TRANSITIONS

- Case 1 Two lane highway to divided highway
A solid line in the direction of travel is begun at a location 200 feet in advance of the begin taper for the pavement width transition.
- Case 2 Divided highway to two lane highway
A solid line in the direction of travel is begun at the end of taper and continues in the direction of travel for a distance of 550 feet.

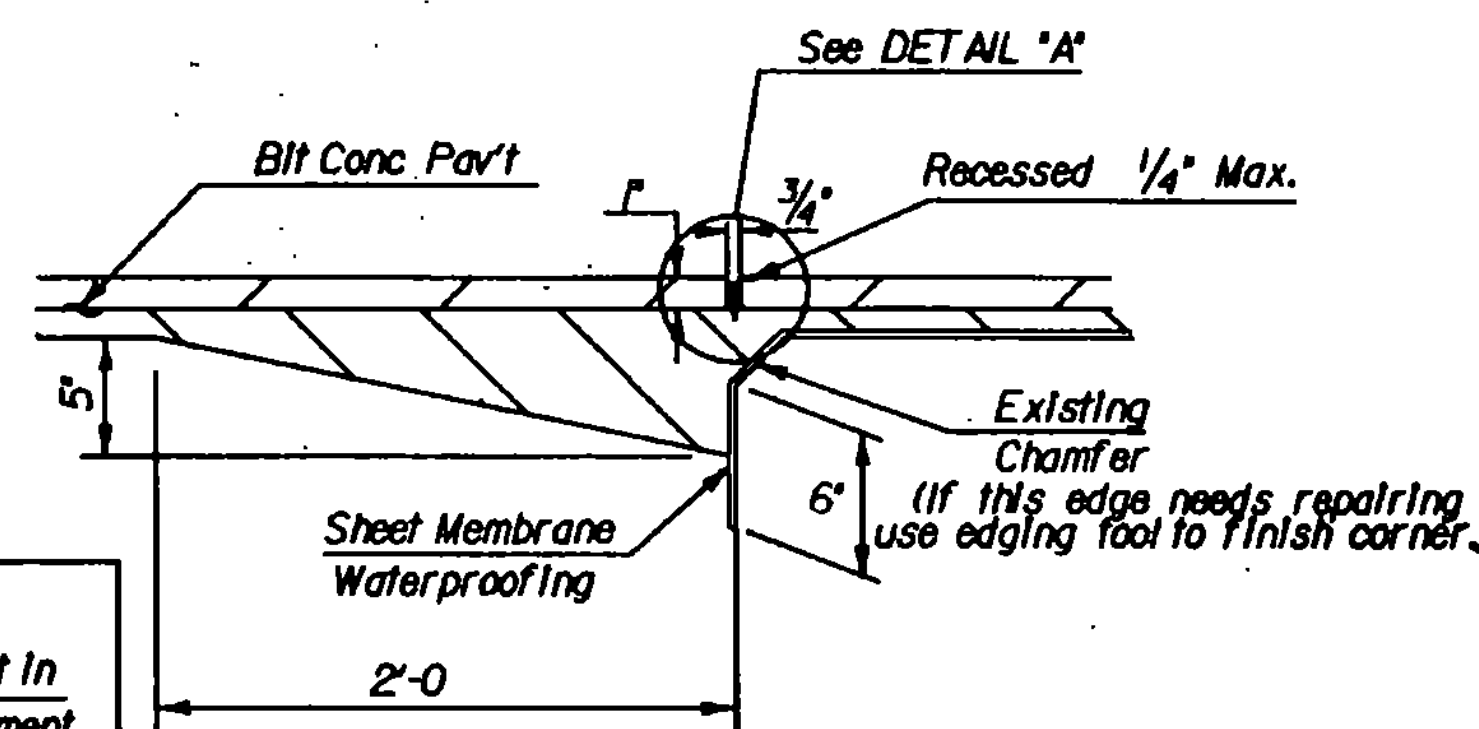


L = Taper Length (ft.)
W = Offset Distance (ft.)
S = Speed Limit (mph)



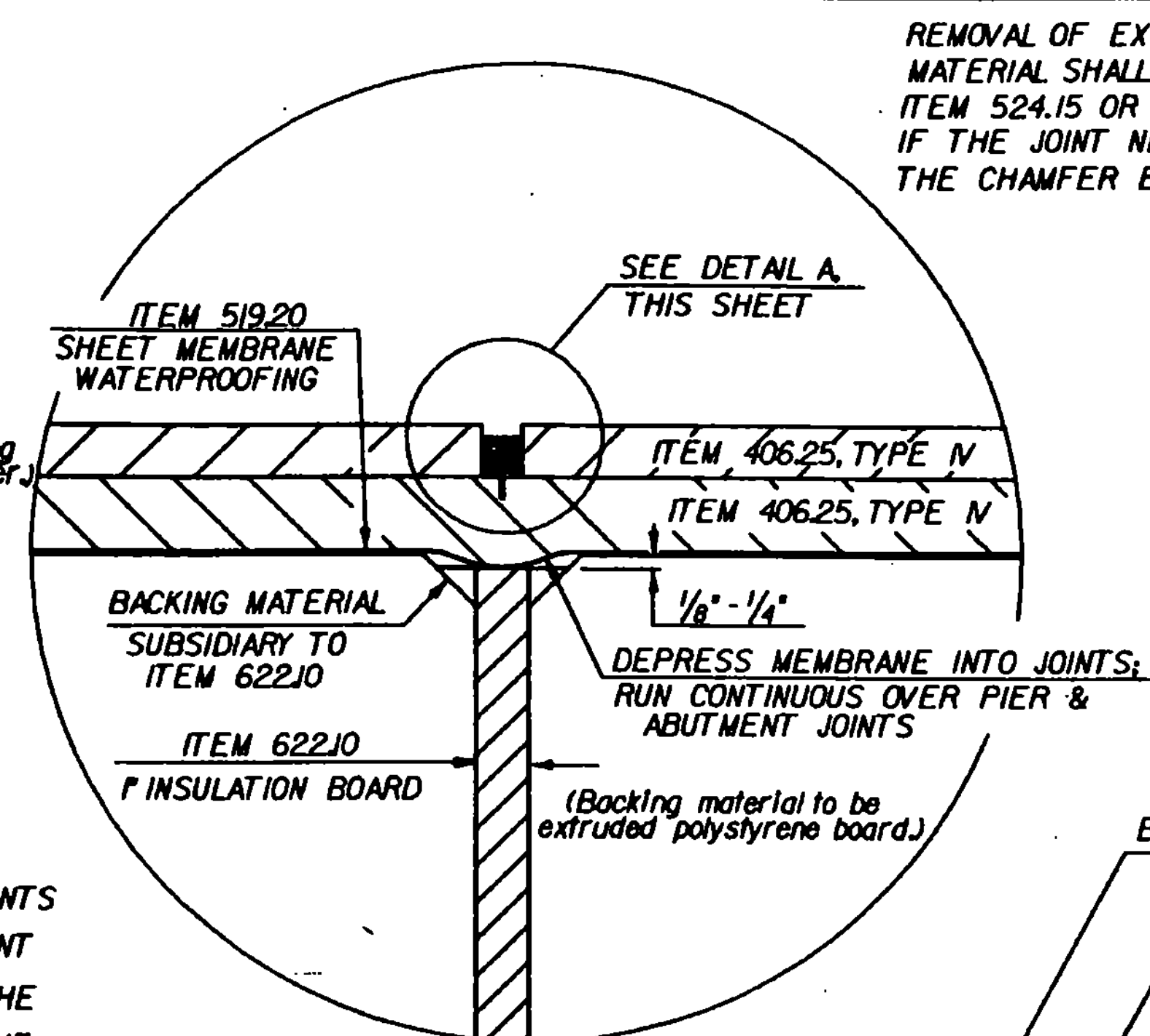
DETAIL "A"
Scale 1" = 1'

Note: Clean sawing dust and other foreign material from the sawed joint before applying the Hot Poured Joint Sealer. See VT.SPEC. 524.05 ①

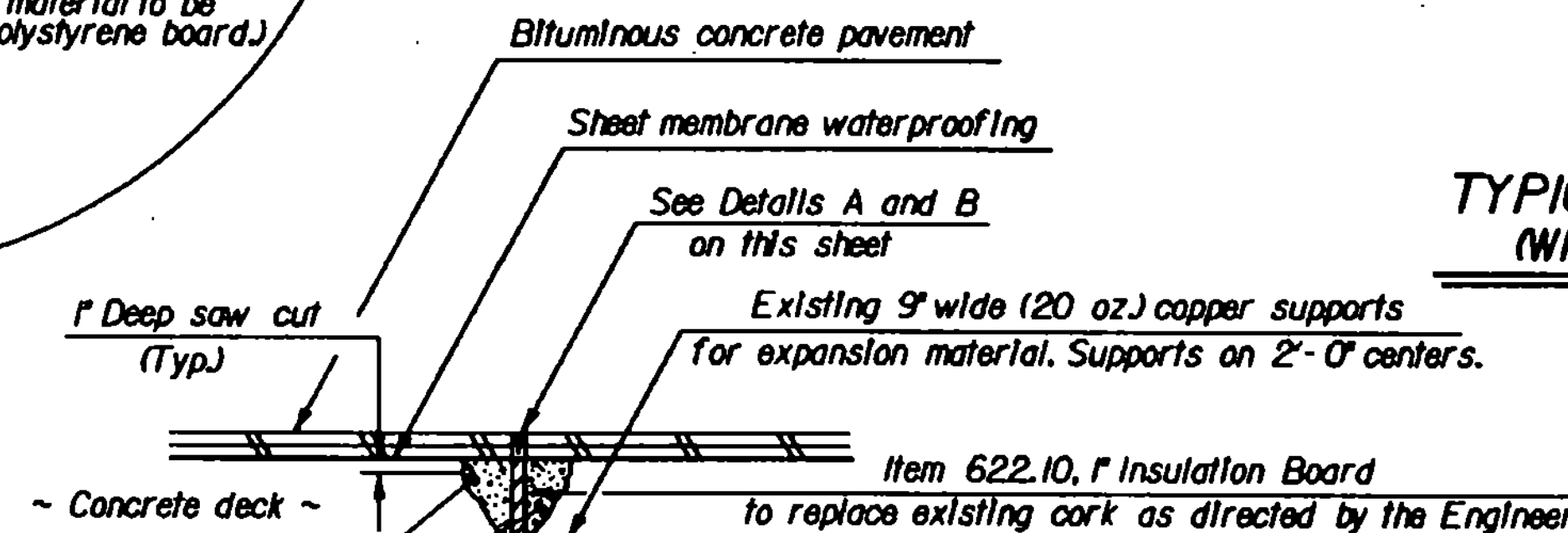


JOINT SEALER DETAIL WITHOUT SURFACE APPROACH SLAB
Scale $\frac{1}{2}$ " = 1'-0"

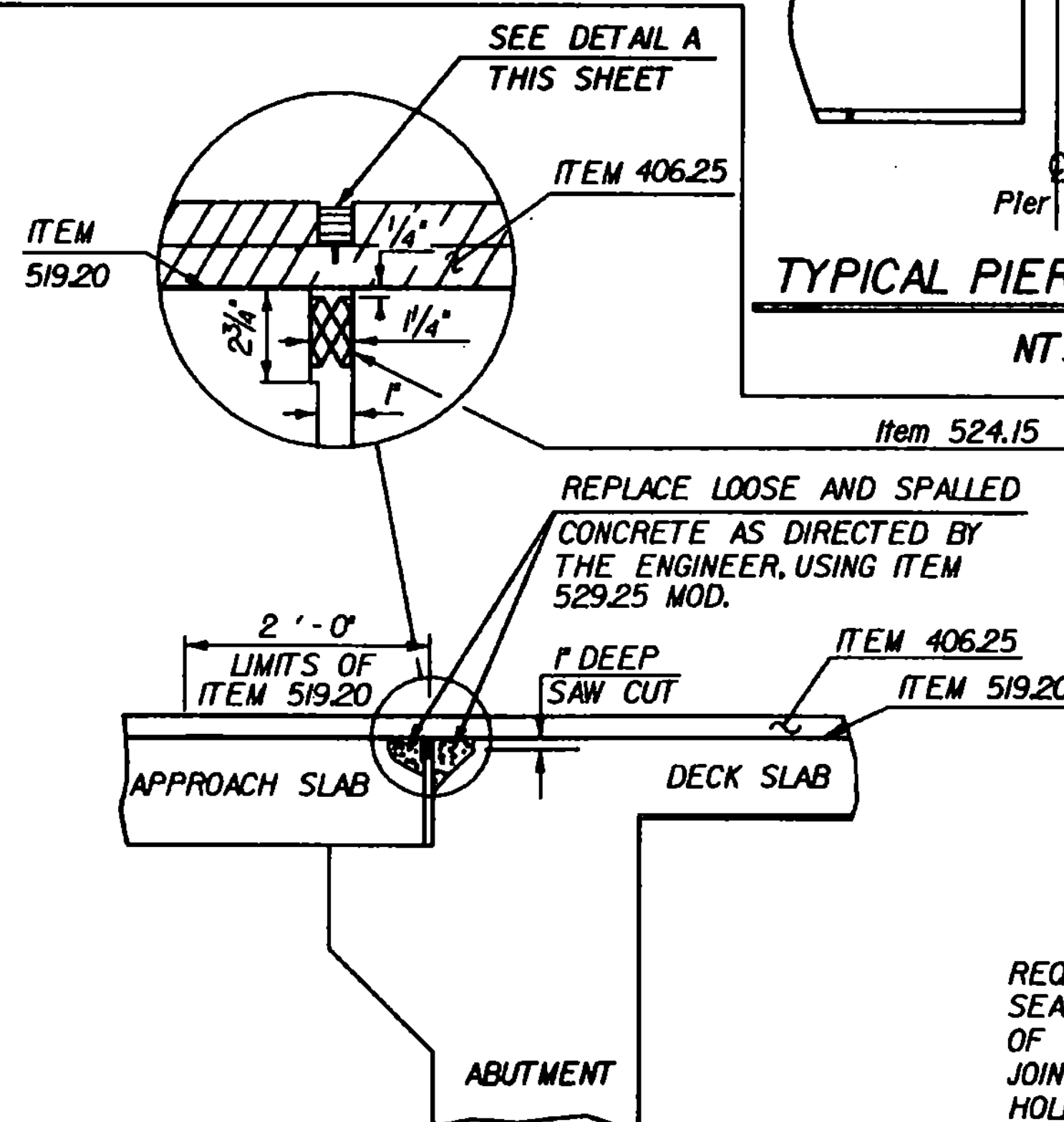
MEMBRANE WILL BE DEPRESSED INTO DECK JOINTS AND RUN CONTINUOUS OVER PIER AND ABUTMENT JOINTS. ON BRIDGES WITH APPROACH SLABS, THE MEMBRANE WILL EXTEND TWO (2) FEET ONTO THE SLAB FROM THE END OF THE BRIDGE.



DETAIL B
NTS



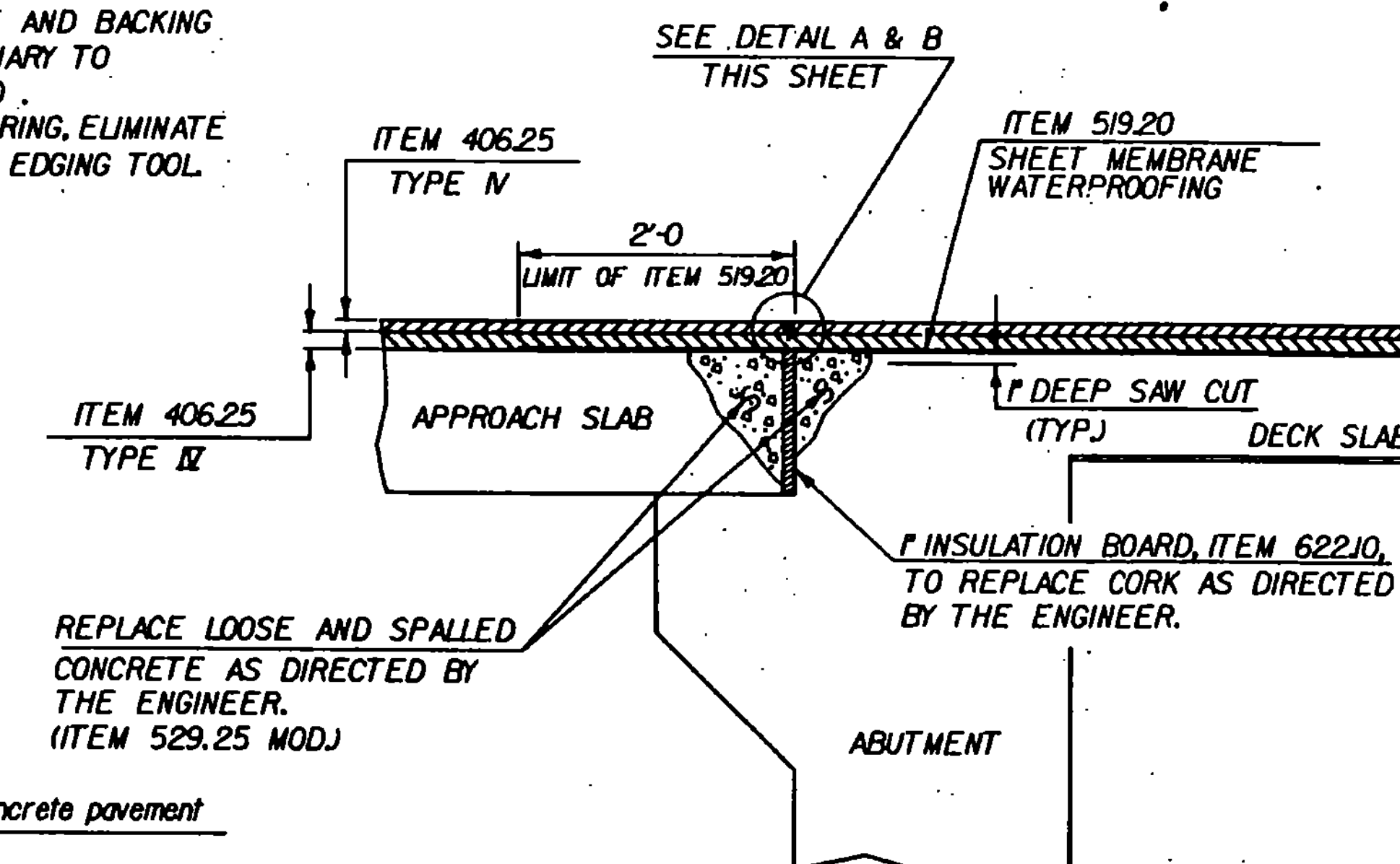
TYPICAL PIER JOINT DETAIL
NTS



COMPRESSION SEAL DETAILS
NTS

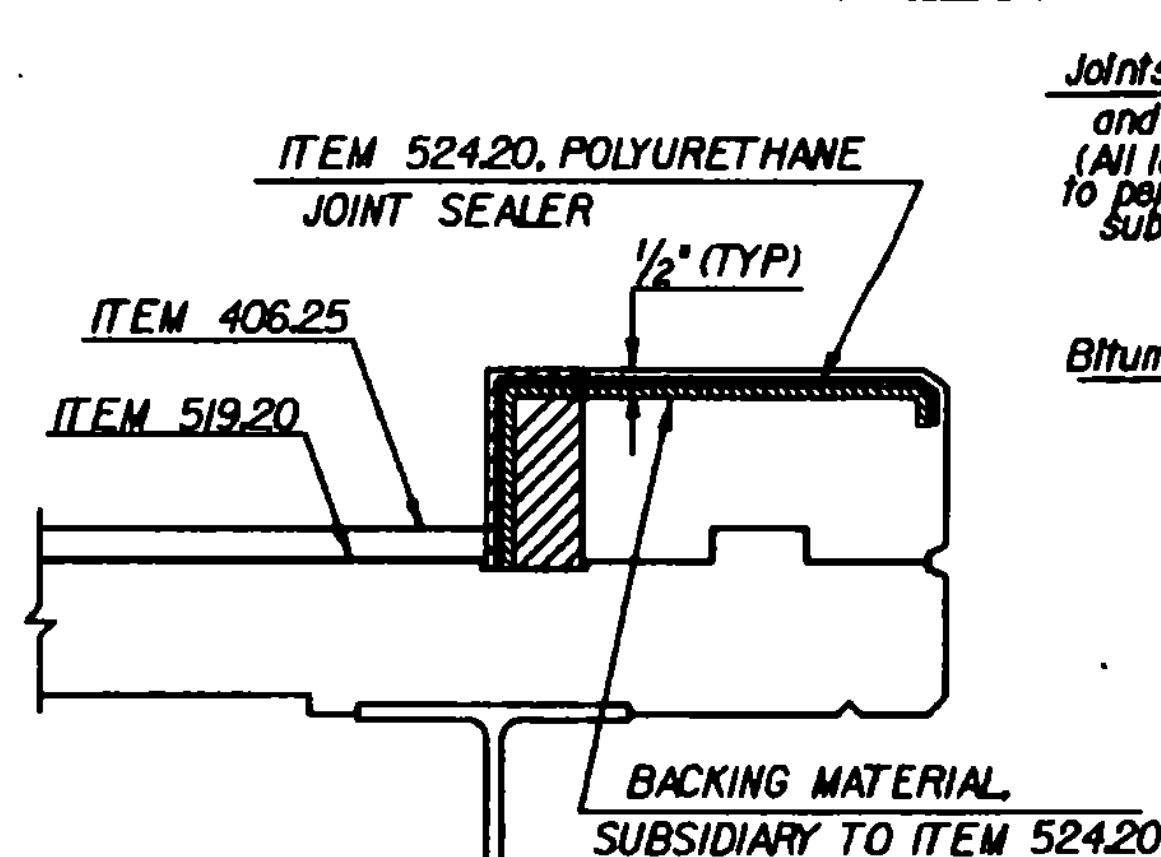
ADHESIVE SPECIFICATION

REQUIRED ADHESIVE FOR STRUCTURAL JOINT SEALS SERVES AS A LUBRICANT FOR INSERTION OF THE COMPRESSION SEALS IN STEEL AND CONCRETE JOINTS; PRIMES THE JOINT FACES; SEALS SMALL HOLES AND IMPERFECTIONS IN CONCRETE WALLS. ONE PART MOISTURE CURING POLYURETHANE AND AROMATIC HYDROCARBON SOLVENT MIXTURE. SOLID CONTENT 72% $\pm$ 3% BY WEIGHT. APPROXIMATE WEIGHT 8 1/2 $\pm$ POUNDS PER GALLON. COLOR, CONCRETE GRAY. ④

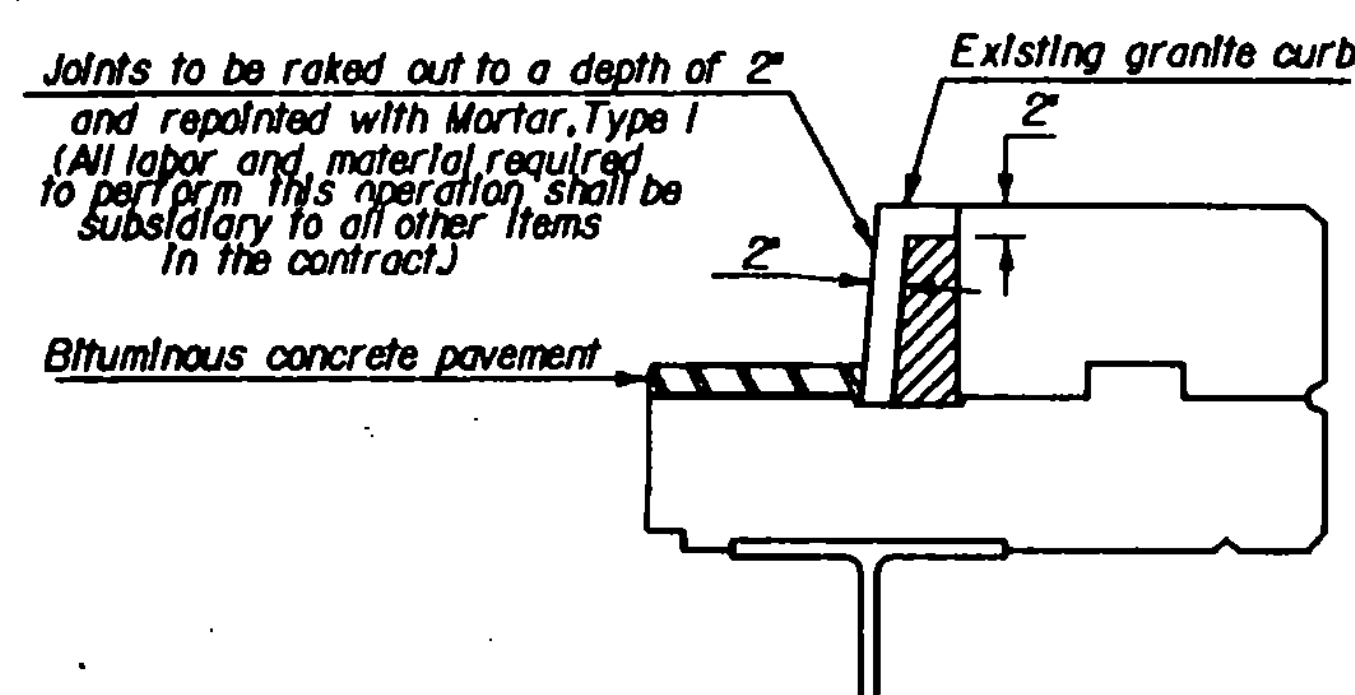


TYPICAL ABUTMENT JOINT DETAIL (WITH SURFACE APPROACH SLAB)
NTS

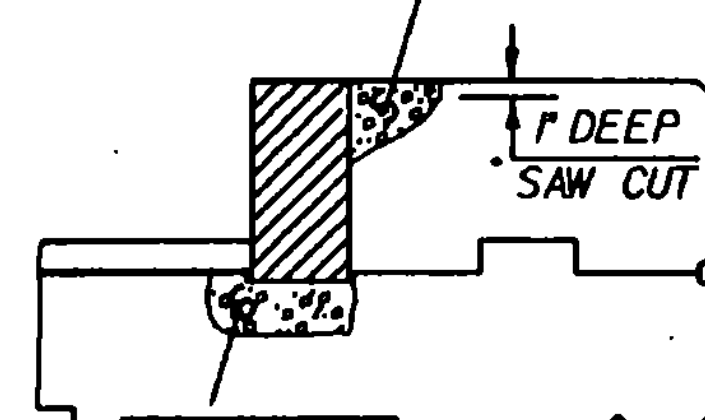
②



SECTION C - C

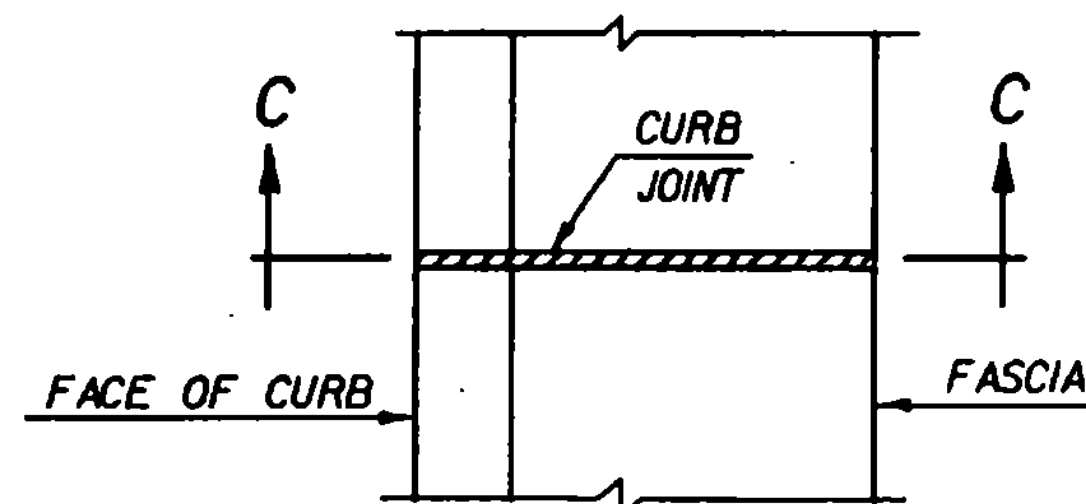


REPLACE LOOSE AND SPALLED CONCRETE AS DIRECTED BY THE ENGINEER, USING ITEM 529.25 MOD.



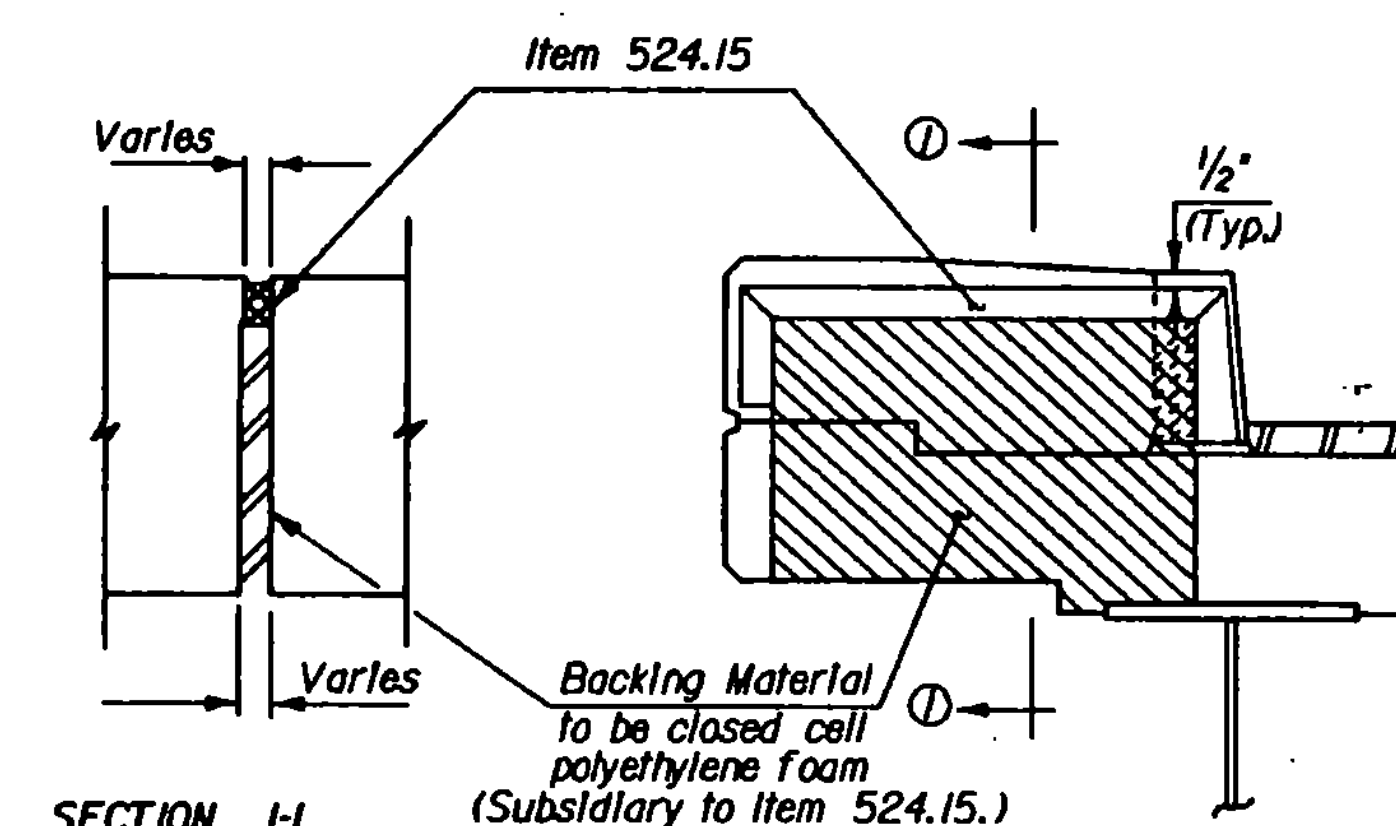
REPLACE LOOSE AND SPALLED CONCRETE OR MORTAR AS DIRECTED BY THE ENGINEER, USING ITEM 501.45 MOD.

CURB JOINT DETAIL
NTS



PLAN VIEW

③

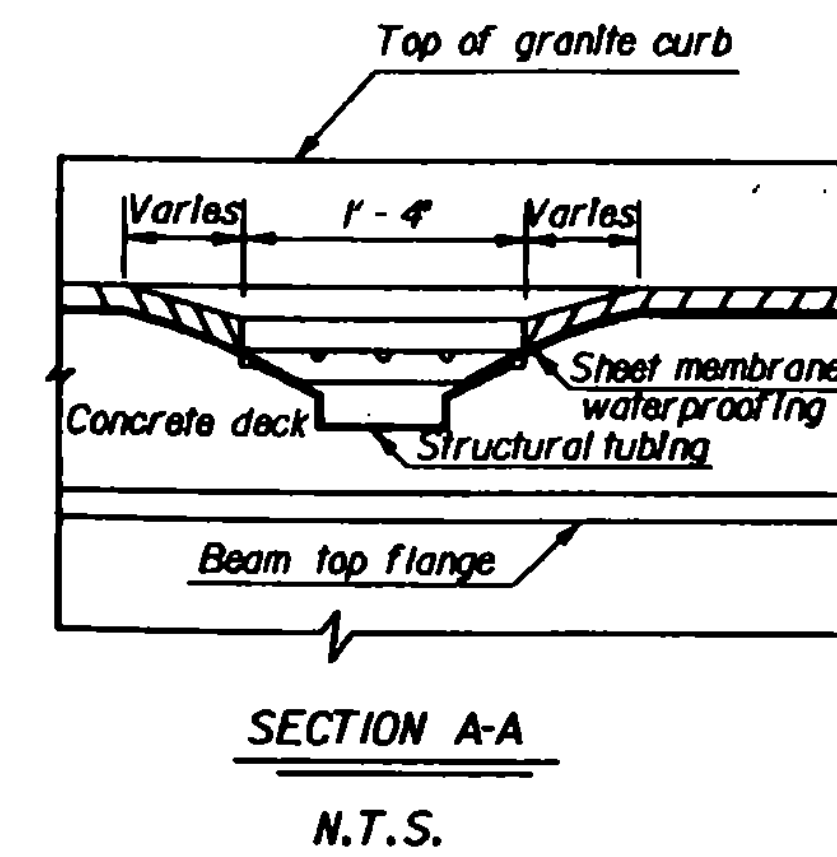
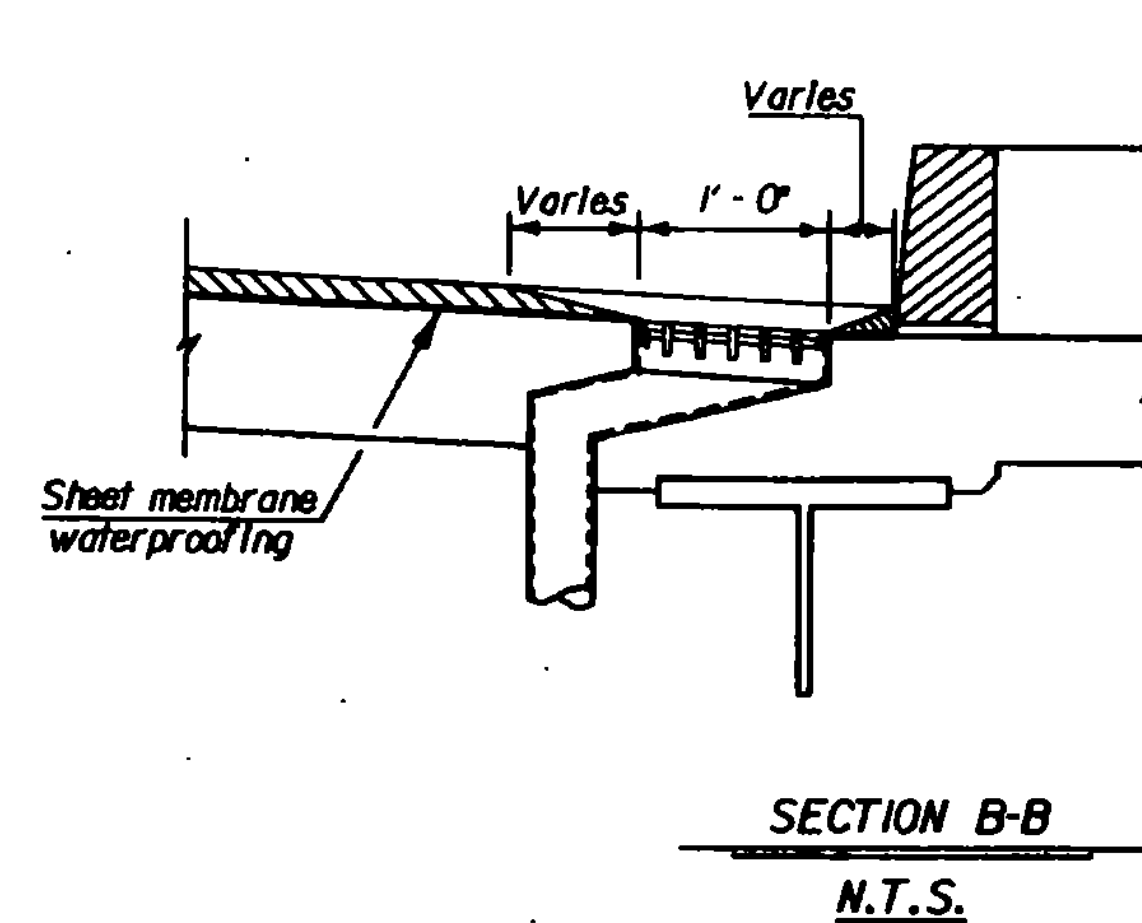


CURB JOINT DETAIL A
NTS

⑤

STATE OF VERMONT AGENCY OF TRANSPORTATION

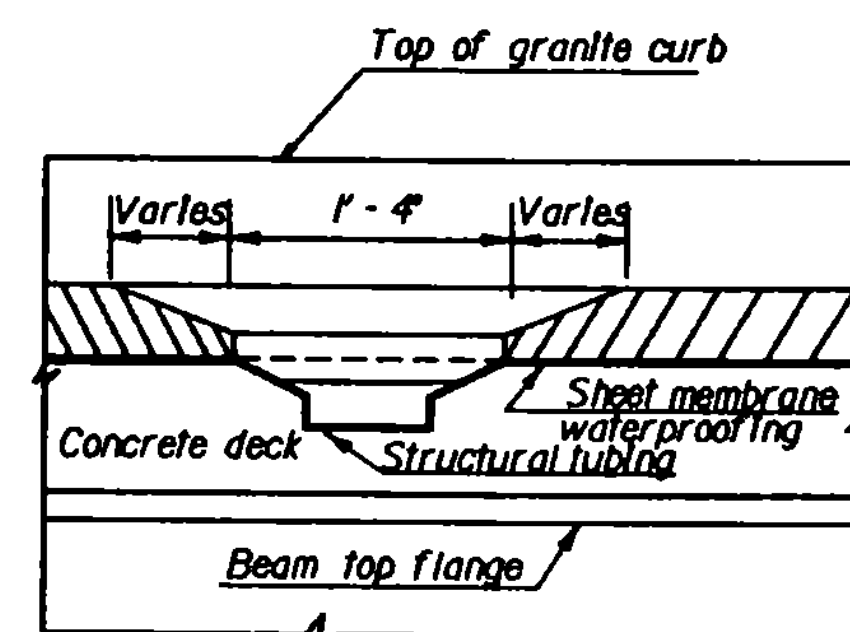
Town Of	Bridge No.
LUDLOW - MT. HOLLY	
Highway No. VT.100 & VT.103	Log Sta.
	Surv. Sta.
DECK REHABILITATION	
TYPICAL DETAILS	
Designed By	Drawn By
G.S. ROGERS	G. Schellay/D. Newton
Checked By	Bridge Design Supervisor
G.S. ROGERS	R.L. OATLEY
Date	Date
6/87	
PROJECT	PROJECT NO.
LUDLOW - MT. HOLLY	F-DECK (22) S
U.C. Info.	OSAI 130.33 DECK REHAB
Bridge Sheet No.	Sheet 13 of 40



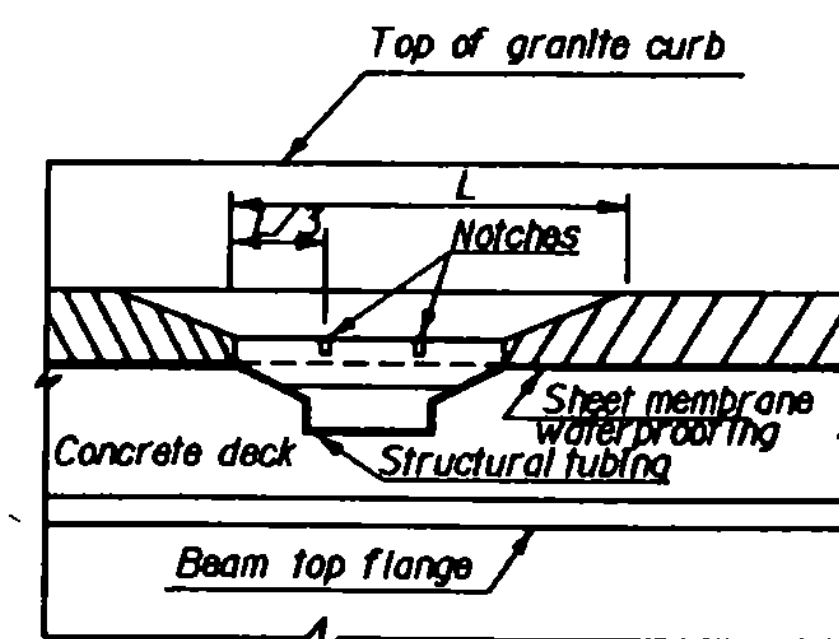
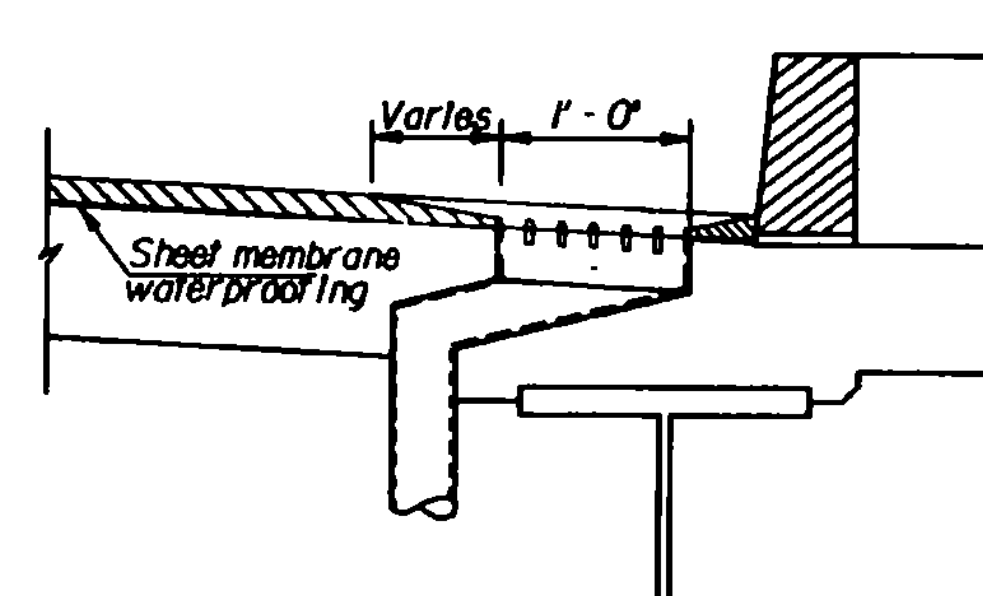
Note: Mark location of scupper; install membrane; make a "X" incision on diagonals of scupper; trim, seal, and wrap into scupper.

MEMBRANE DETAIL FOR SCUPPERS FLUSH WITH DECK

①



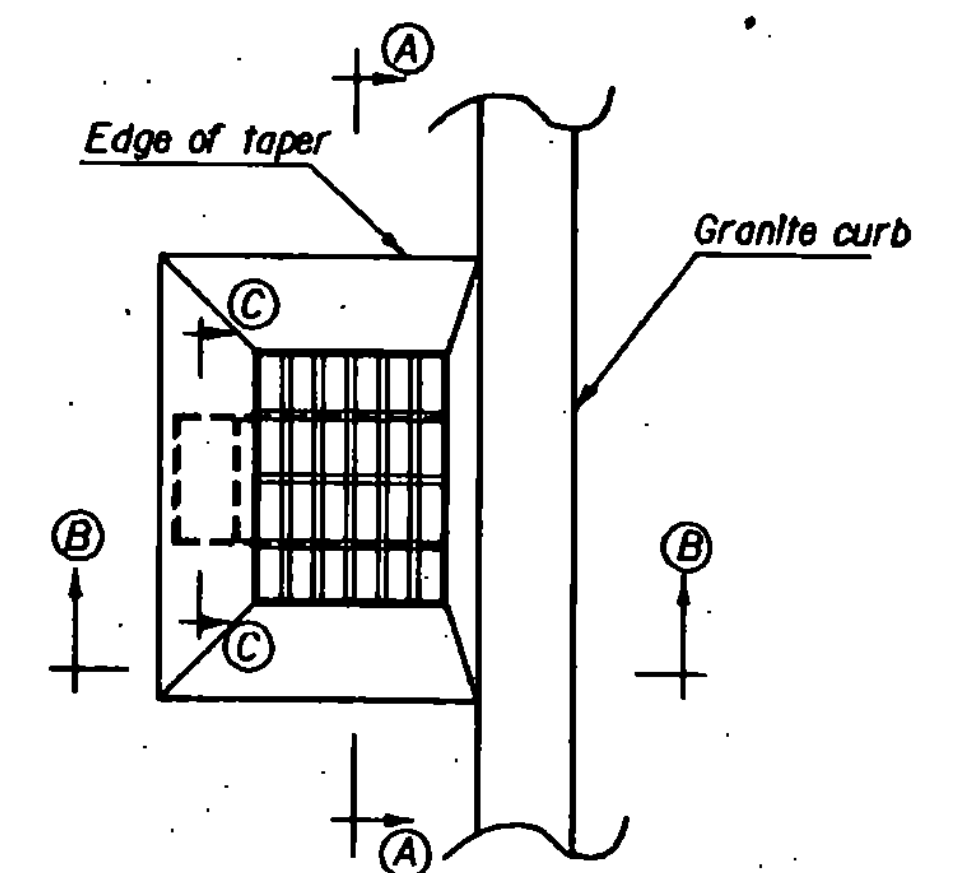
Fit membrane to outside perimeter of scupper.



Note: Notch scupper 1/2" wide to top of concrete on three sides. This work to be subsidiary to the Item 519.20

MEMBRANE DETAIL FOR RAISED SCUPPERS

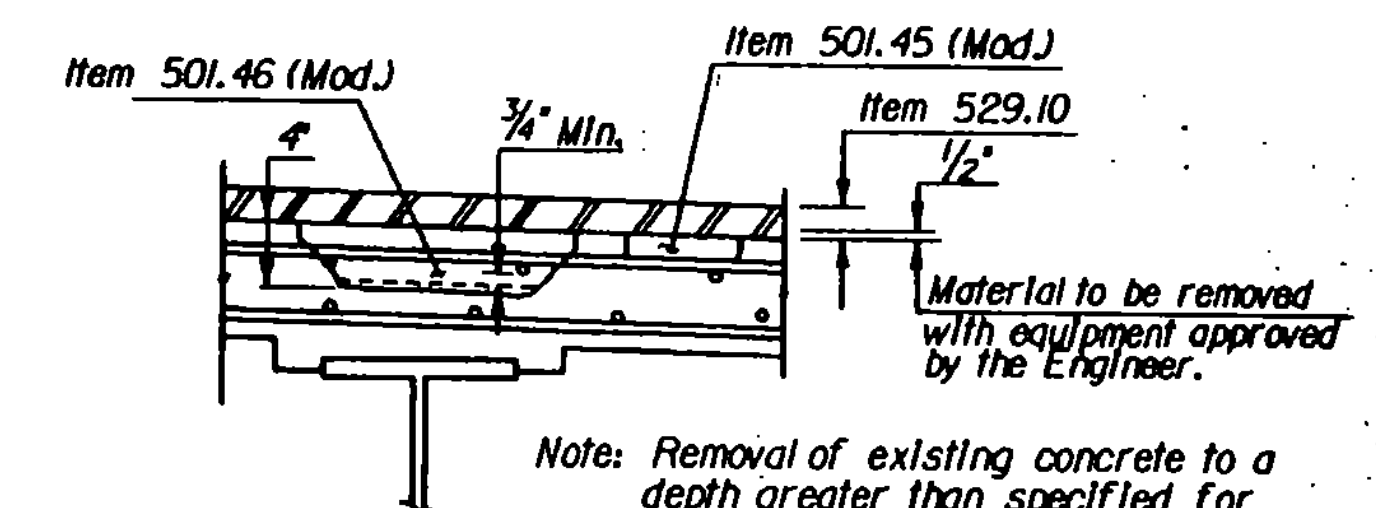
②



PLAN VIEW
(TYP. FOR DETAILS NO. 1 & 2)
N.T.S.

③

Note: All edges of repair areas are to be saw cut square and a minimum of one (1) inch deep.
Note: Item 501.45 (Mod.) shall include removal of concrete to a maximum depth as determined by the top of the top bars of reinforcing steel.



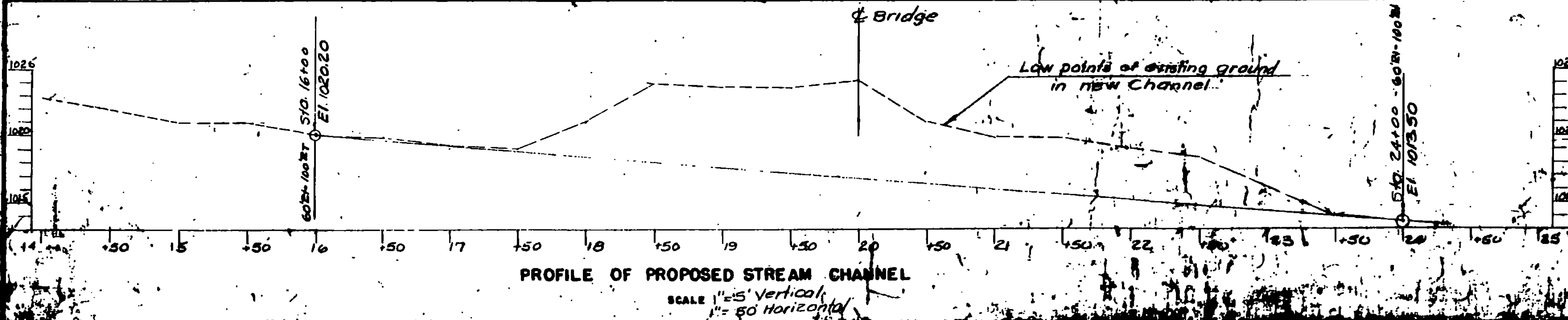
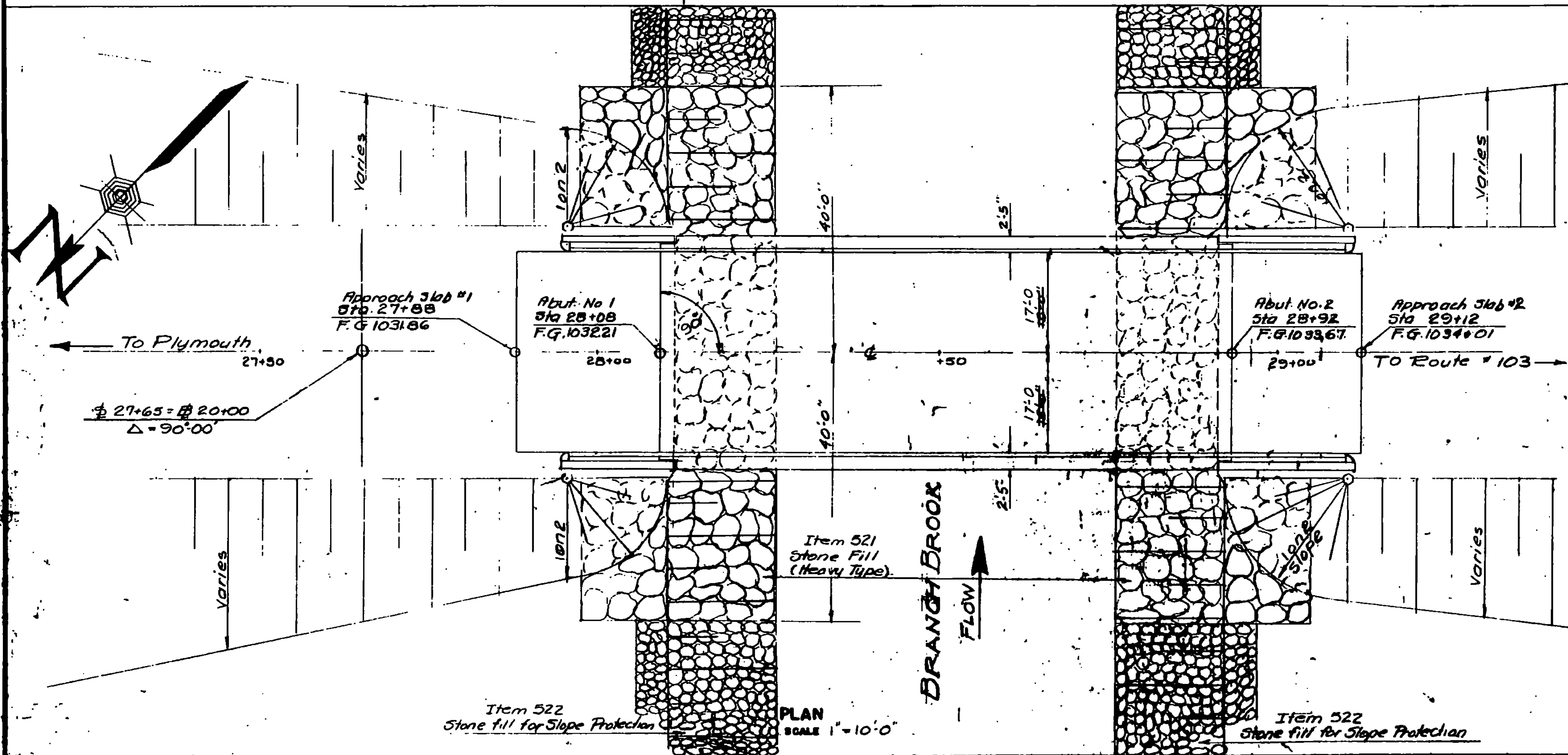
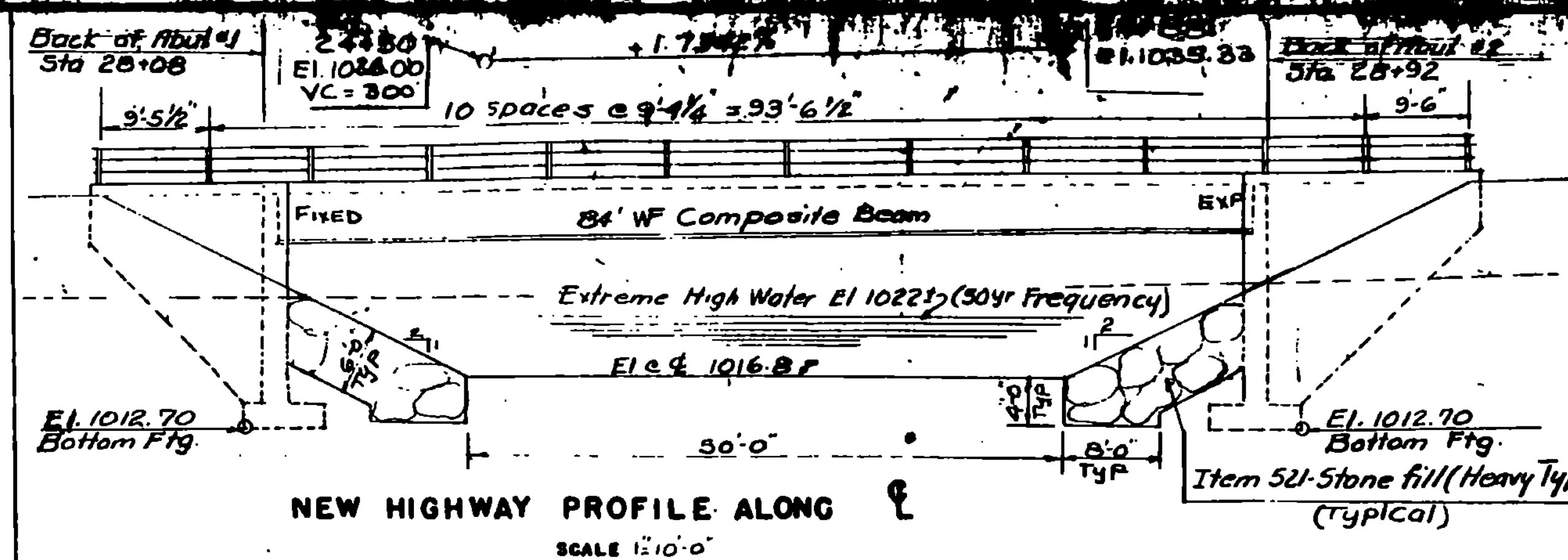
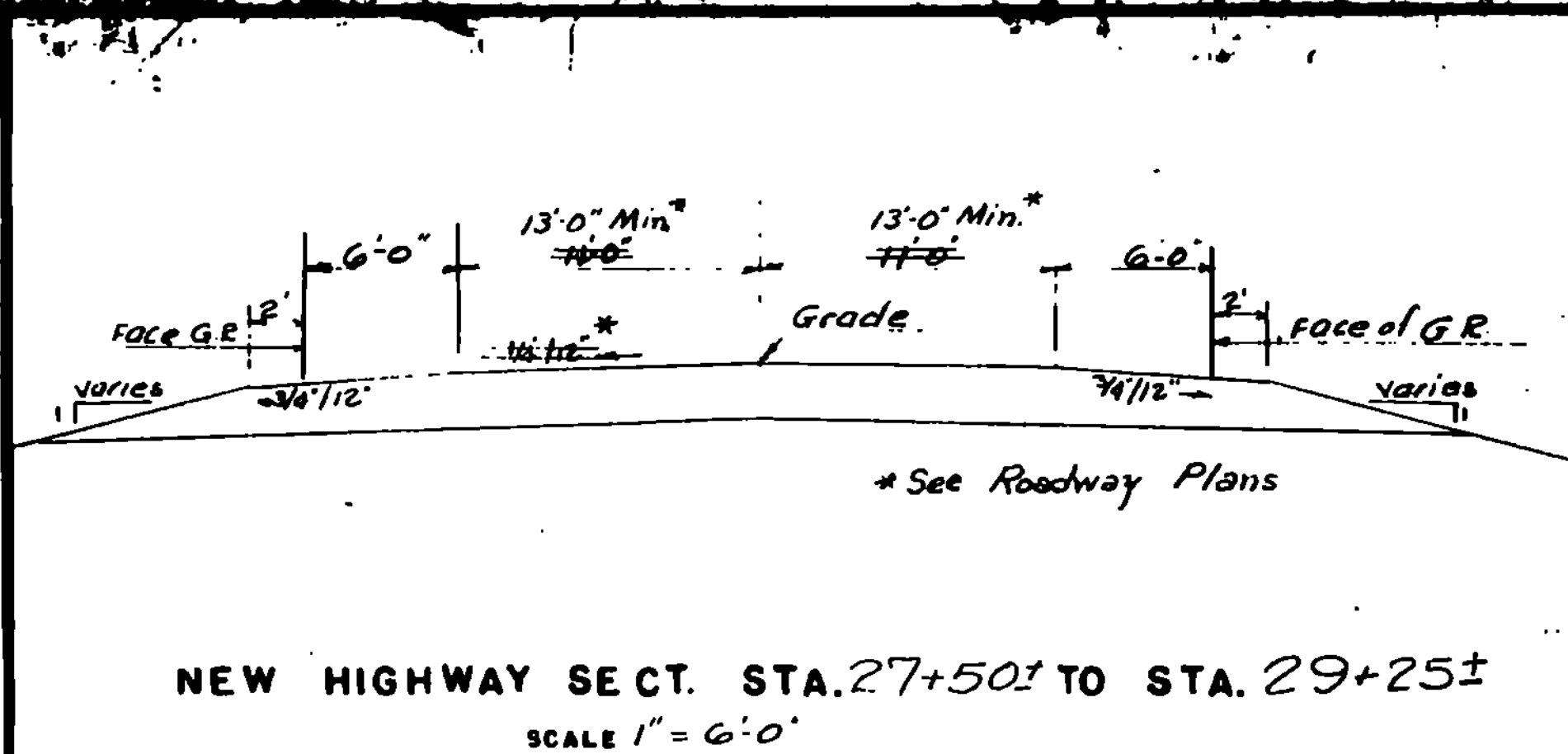
TYPICAL LIMITS FOR REMOVAL ITEMS

N T S

④

STATE OF VERMONT AGENCY OF TRANSPORTATION

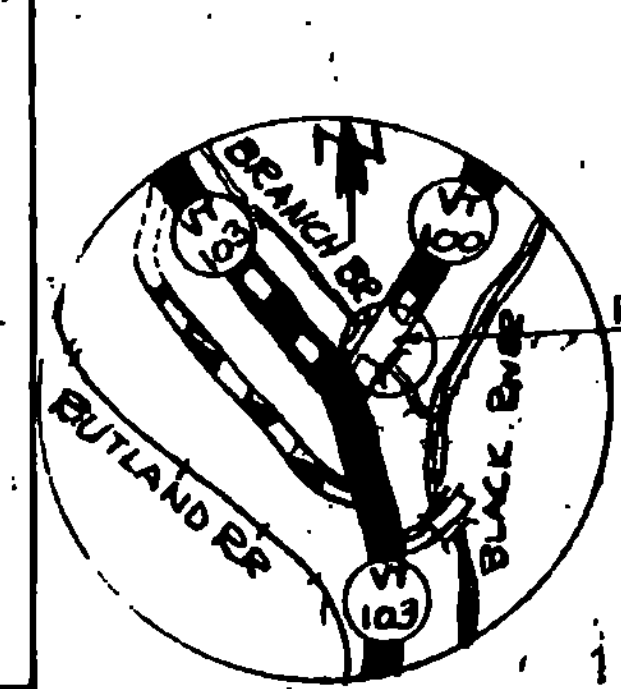
Town Of	LUDLOW - MT. HOLLY	Bridge No.	
Highway No.	VT 100 & VT 103	Log Sta.	
		Surv. Sta.	
DECK REHABILITATION			
TYPICAL DETAILS			
Designed By	G.S. ROGERS	Drawn By	D.W. NEWTON
Checked By	G.S. ROGERS	Bridge Design Supervisor	R.L. OATLEY
Date	6/87	Date	6/87
PROJECT	LUDLOW - MT. HOLLY	PROJECT NO.	F-DECK (22) S
L&C info.	ZFA130.321SCUPREHABDGN	PRF: LUDMTHLY	
Bridge Sheet No.		Sheet	14 of 40



HIGHWAY NO. <u>VT 100</u> STRUCTURE NO. <u>BR 3 OF 10</u> PROJECT NO. <u>F025-1(6)</u>	NAME OF HIGHWAY COUNTY <u>WINDSOR</u> TOWN <u>LUDLOW</u> LOCATION <u>BRANCH BROOK</u>
EXISTING STRUCTURE 1 RATED LOADING OF EXISTING STRUCTURE <u>H-15 Live Loading</u> 2 TYPE OF EXISTING STRUCTURE <u>Concrete I Beams</u> 3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE <u>4.4±</u> 4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE <u>Remove</u> COST OF REMOVAL <u>\$500</u> 5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE <u>NO</u> 6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT <u>NO</u> 7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE <u>1021.45</u> WATERWAY TO ORDINARY H.W. <u>120±</u> 8 EXTREME HIGH WATER AT EXISTING STRUCTURE <u>1022.5</u> WATERWAY TO EXTREME H.W. <u>500±</u> 9 SPAN OF EXISTING BRIDGE UPSTREAM <u>30</u> WATERWAY TO EXTREME H.W. <u>500±</u> 10 SPAN OF EXISTING BRIDGE DOWNSTREAM <u>None</u> WATERWAY TO EXTREME H.W. <u>500±</u> 11 TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS 12 DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE 13 IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED 14 ADDITIONAL WATERWAY AREA PROVIDED	
NEW STRUCTURE 1 RECOMMENDED TYPE OF STRUCTURE <u>one 34' span Composite WF Beam</u> 2 RECOMMENDED CLEAR SPAN OR SPANS <u>one span, 30'</u> 3 MEASURED PARALLEL TO NEW HIGHWAY <u>30'</u> 4 MEASURED AT RIGHT ANGLES TO STREAM <u>30'</u> 5 ARE THERE OBJECTIONS TO A PIER IN THE STREAM, ANSWER YES OR NO <u>NO</u> 6 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE <u>1020± (3'±)</u> 7 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE <u>1022±</u> SOURCE OF INFORMATION <u>Computed</u> 8 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE? <u>YES</u> 9 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? <u>NO</u> IS ORDINARY SIZE <u>NO</u> 10 LOW WATER ELEVATION AT NEW STRUCTURE <u>1010± (1'±)</u> 11 DRAINAGE AREA IN ACRES ABOVE STRUCTURE <u>2432</u> CHARACTER OF TERRAINE <u>Mountainous</u> 12 IS STREAM EVER DRY? <u>NO</u> 13 VELOCITY OF STREAM AT HIGH WATER STAGE <u>8.15</u> ESTIMATED DISCHARGE <u>2600 CFS</u> 14 AREA FULL OPENING <u>3000</u> AREA BELOW ORDINARY H.W. <u>175±</u> 15 CHARACTER OF SCOUR <u>DRIFT</u> 16 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE <u>NA</u> 17 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION <u>7.0±</u> 18 ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE <u>NO</u> 19 RECOMMENDED TYPE OF PAVEMENT <u>1 1/2" Bit Conc Pavt. 4" Base 4" Sub</u> 20 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. <u>NA</u> ONE OR TWO WAYS <u>PROBABLE ONE</u> 21 PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE <u>NA</u> 22 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? <u>NO</u> 23 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS <u>2000±</u> SHOULD PILES BE USED? <u>NO</u>	

FOUNDATION INFORMATION
 OBTAINED FOR DESIGN PURPOSES ONLY, AND THE STATE ASSUMES NO RESPONSIBILITY FOR THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN. SOURCES, WHEN ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION.

Note - For Detail of Superstructure See BR 3A of 10



Sheet Revised <u>2-8-64</u> BR 3 OF 10 STATE OF VERMONT DEPARTMENT OF HIGHWAYS IN THE TOWN OF <u>MT. HENRY - LUDLOW</u> ROUTE NO. <u>100</u> 100 ST.	F-DECK (22)S, BR # 99 THIS SHEET FOR INFORMATION ONLY Recommended for Approval <u>Amey</u> <u>6/1/64</u> Bridge Engineer Recommended for Approval <u>R.H. Cram</u> <u>6/1/64</u> Chief Engineer Approved by <u>A.O. Sibley</u> <u>6/1/64</u> Chief Engineer
SURVEYED BY <u>W.D.S.</u> CHECKED BY <u>W.D.S.</u> PROJECT NO. <u>F025-1(6)</u>	SHEET <u>13</u> OF <u>10</u>



6 brg - 10' double @ 5 1/4"
10' - 20' double @ 6"
20' - 30' @ 4"
30' - 6 Span @ 5"

F-DECK(22)S, BR. #99
THIS SHEET FOR INFORMATION ONLY
Rev. BR 4A of 16

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF MT. HOLLY-LUDLOW

ROUTE No. 1-89 LOG STA. 1+30

TYPICAL BRIDGE SECTION

REVISÉD SHEET-----

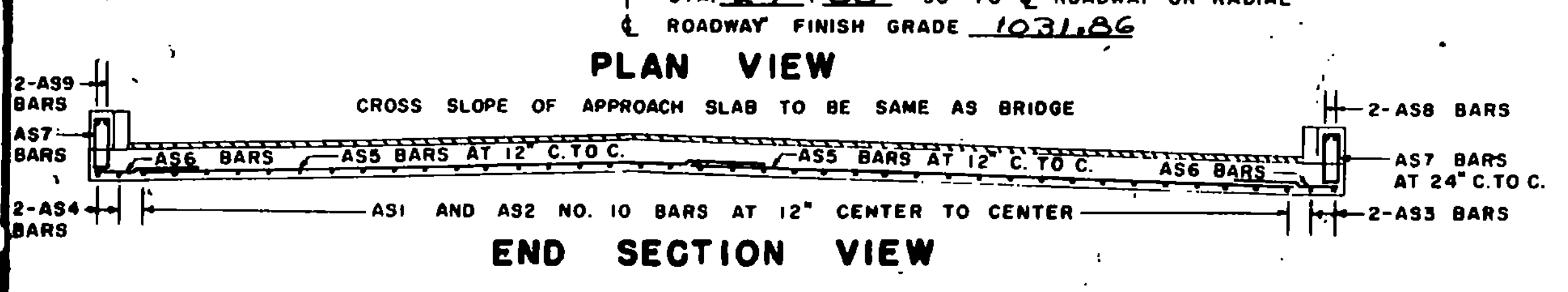
SCALE $\frac{1}{4}$ in. = 1 ft.

SURVEYED BY _____

DRAWN BY AGC CHECKED BY WLB

PROJECT NO. F025-1(6)-----

SHEET 24-A OF 196

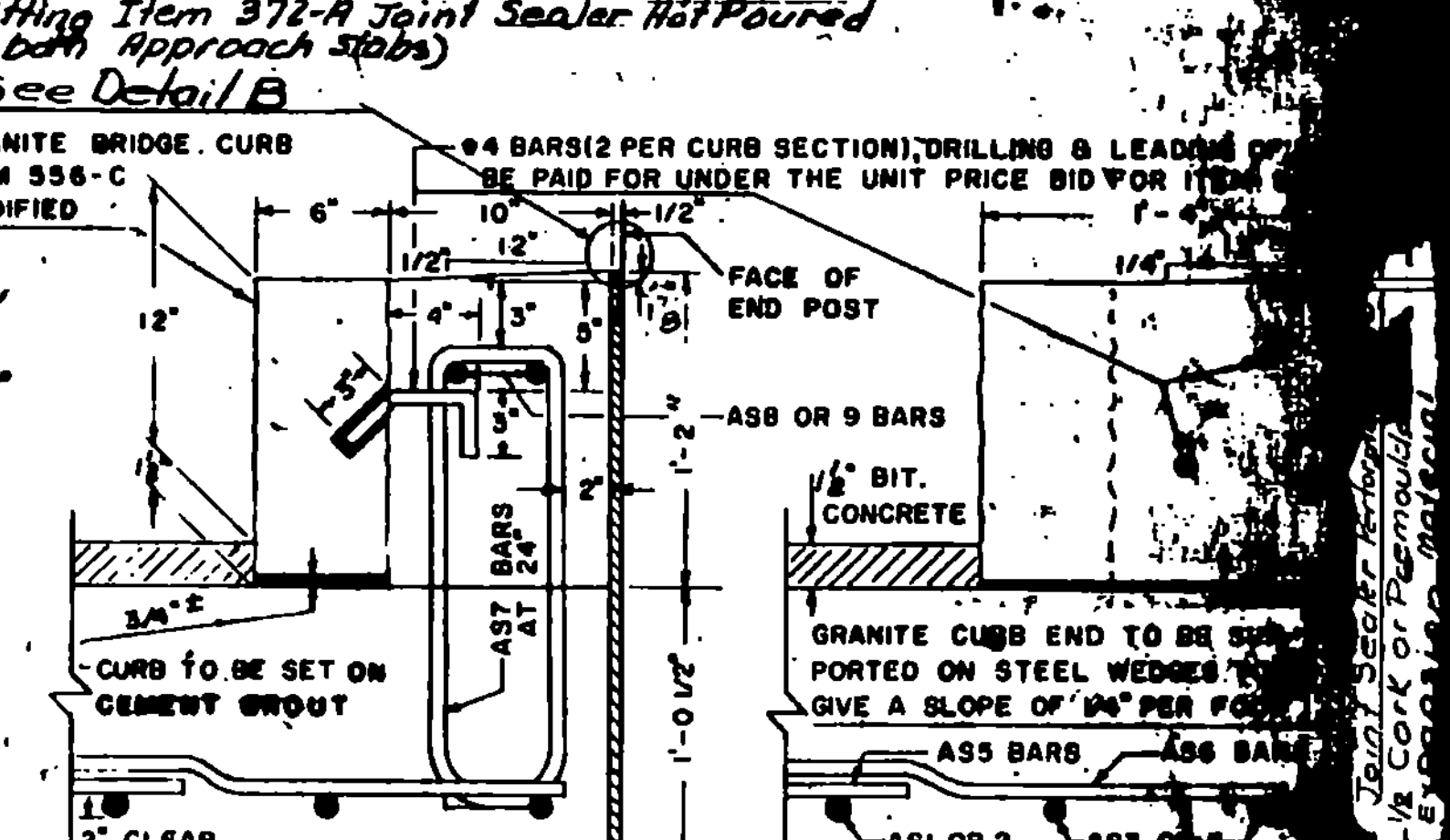
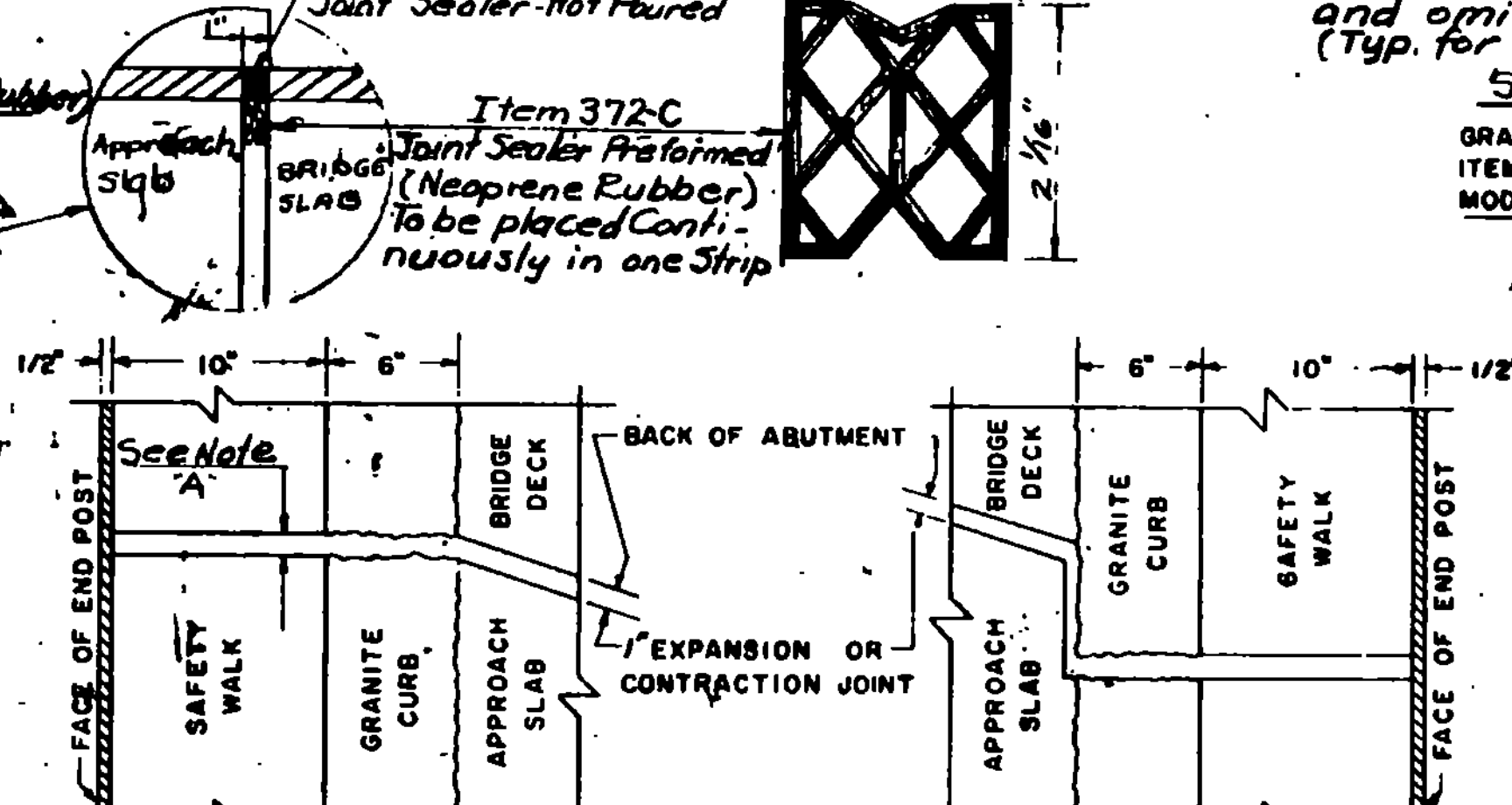


REMARKS: 1. AS1 BAR "B" DIMENSION VARIES FROM 9'-6" TO _____. 2. $20 + \text{DIMENSION ("B" + "L")} \div 4$ (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECE OPPOSITE HALF OF SLAB. 3. $40 + \text{DIMENSION ("B" + "L")} \div 2$ (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. 4. THE LENGTH OF AS2 BARS VARIES FROM _____. THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2, 3. SEE REINF. NOTES.)

- Item 372-A
Joint Sealer - Not Paired

2"

Note A - Use Item 372-C for the Joint in the Curb, placing the material flush with the face and top of curb and omitting Item 372-A Joint Sealer. Not Paired (Typ. for both Approach slabs)

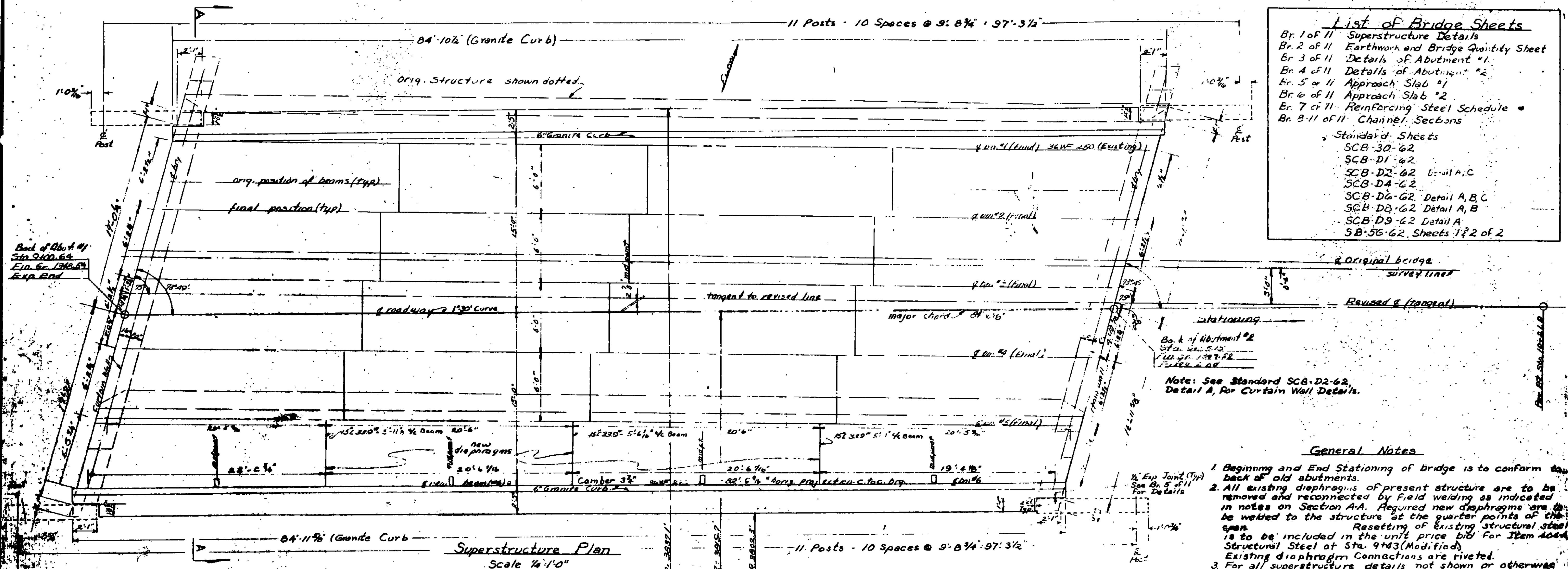


QUANTITY COMPUTATION			
W = WIDTH OF ROADWAY	Z = 20 + DIMENSION	"P" + "I"	T = DIMENSION
W = <u>50</u> 34	Z = <u>20</u>		T = <u>14.5</u>
BITUMINOUS CONCRETE - W x Z = 0.0092 x TONS <u>3430</u> = <u>20</u> x 0.0092 = <u>162</u> TONS			
TAR EMULSION - W x Z = 0.044 x GALLONS <u>3430</u> = <u>20</u> x 0.0444 = <u>788</u> GALLONS			
CONCRETE CLASS B - W x Z = 0.0386 + T x 0.1029 + (T - 1.8333) x 0.0733 = <u>CLAS 2</u>			
<u>[50 x 20 = 0.0386] + [20 x 0.1029] + [(14.5 - 1.8333) x 0.0733] = <u>1.22</u></u>			
GRANITE BRIDGE CURB - 2(T + 0'-3") = LINEAR FEET <u>2(14.5 + 0.25)</u> = <u>30</u>			
BAR LENGTHS: AS3 BARS - DIMENSION "M" - 0'-0" * One bar Added for F-DECK (22)S, BR.#99			
AS4 BARS - DIMENSION "R" - 0'-0"			
AS6 BARS - 3'-6"			
AS7 BARS - 5'-0"			
AS8 BARS - DIMENSION "M" - 2'-2"			
AS9 BARS - DIMENSION "R" - 2'-2"			
THIS SHEET FOR INFORMATION ONLY			
Sheet Revised			

DETAILS OF APPROACH SLAB #1
FOR 30.34 FOOT BRIDGE
(WIDTH)
TO BE USED FOR BRIDGE AT STATION 28+50
LOCATION BRANCH DRAIN

STATE OF VERMONT
 DEPARTMENT OF HIGHWAYS
 STANDARD STRUCTURE
 SB-1
 TOWN OF MT. HOLLY
 ROUTE NO. VT. No. 100
 LOG STA. 1+57.1
 SCALE AS SHOWN
 DESIGNED BY W. H. HARRIS
 SHEET 17 of 40

TOWN OF MT. HOLLY
ROUTE NO. VT 1001
LOG STA. 1+30
SCALE AS NOTED
DESIGNED BY G.Y.K. CHECKED BY
002 NOTED BY 5025



- List of Bridge Sheets**
- Br. 1 of 11 Superstructure Details
 - Br. 2 of 11 Earthwork and Bridge Quantity Sheet
 - Br. 3 of 11 Details of Abutment #1
 - Br. 4 of 11 Details of Abutment #2
 - Br. 5 of 11 Approach Slab #1
 - Br. 6 of 11 Approach Slab #2
 - Br. 7 of 11 Reinforcing Steel Schedule
 - Br. 8 of 11 Channel Sections
- Standard Sheets**
- SCB-30-62
 - SCB-D1-62
 - SCB-D2-62 Detail A, C
 - SCB-D4-62
 - SCB-D6-62 Detail A, B, C
 - SCB-D8-62 Detail A, B
 - SCB-D9-62 Detail A
 - SB-56-62 Sheets 1 & 2 of 2

Note: See Standard SCB-D2-62, Detail A, for Curtain Wall Details.

General Notes

- Beginning and End Stationing of bridge is to conform to back of old abutments.
- All existing diaphragms of present structure are to be removed and reconnected by field welding as indicated in notes on Section A-A. Required new diaphragms are to be welded to the structure at the quarter points of the span. Resetting of existing structural steel is to be included in the unit price bid for Item 404. Structural Steel at Sta. 9443 (Modified). Existing diaphragm connections are riveted.
- For all superstructure details not shown or otherwise indicated see Standard Sheets SCB-30-62, SCB-D4-62. For quantities see Bridge Quantity Sheet.
- For details of bearing plate for new 36 WF 260 see Standard Sheets SCB-D8-62 and SCB-D9-62. New wedge bolts are to be furnished for all existing beam bearings. All existing bearings are to be reused. Note extra long wedge bolts.
- The present slab of structural steel is to be removed under Item 404. Removal of Present Superstructure. All existing structural steel is to be incorporated in the new structure. This steel is to be cleaned and painted under Item 504. Hand Cleaning & Painting of Structural Steel.
- For additional General Notes see Standard Sheet SCB-D1-62.

Br. 1 of 11

F-DECK (22)S, BR. #33
THIS SHEET FOR INFORMATION ONLY

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

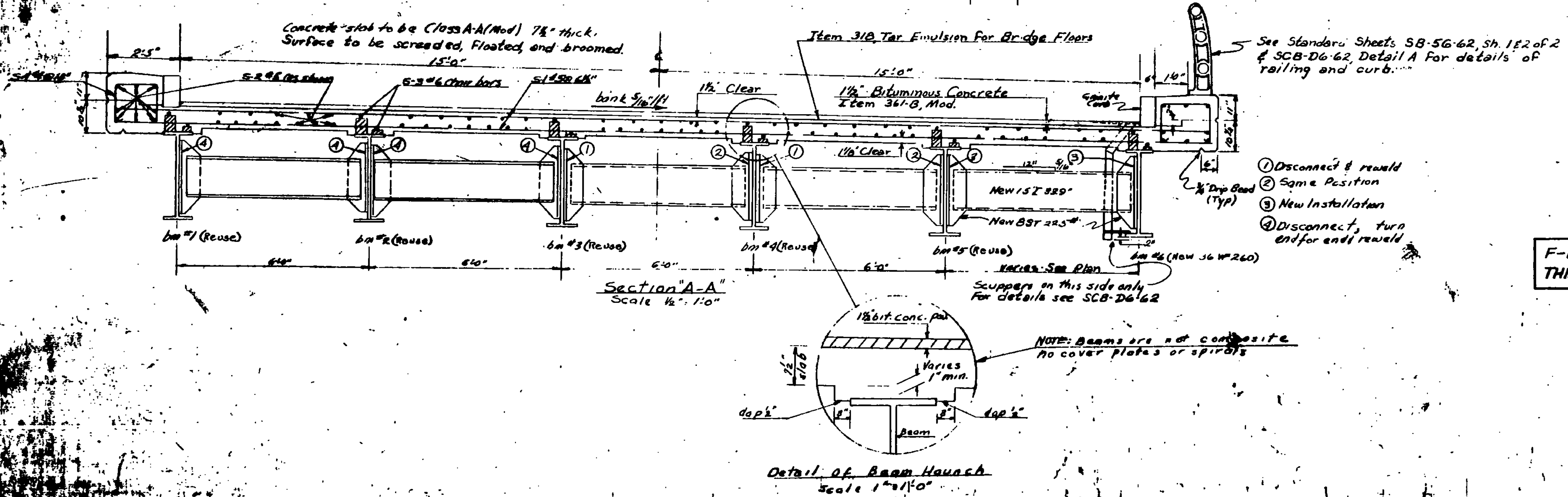
TOWN OF Mt. Holly - Ludlow
ROUTE NO. VT. 103 LOG STA. 44

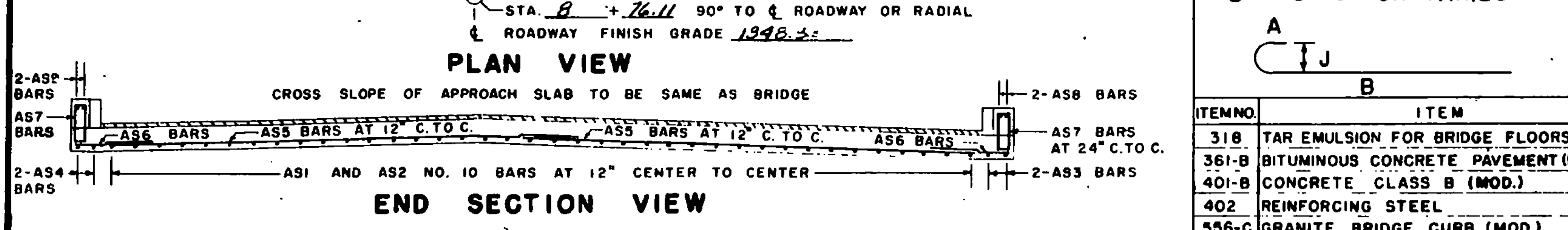
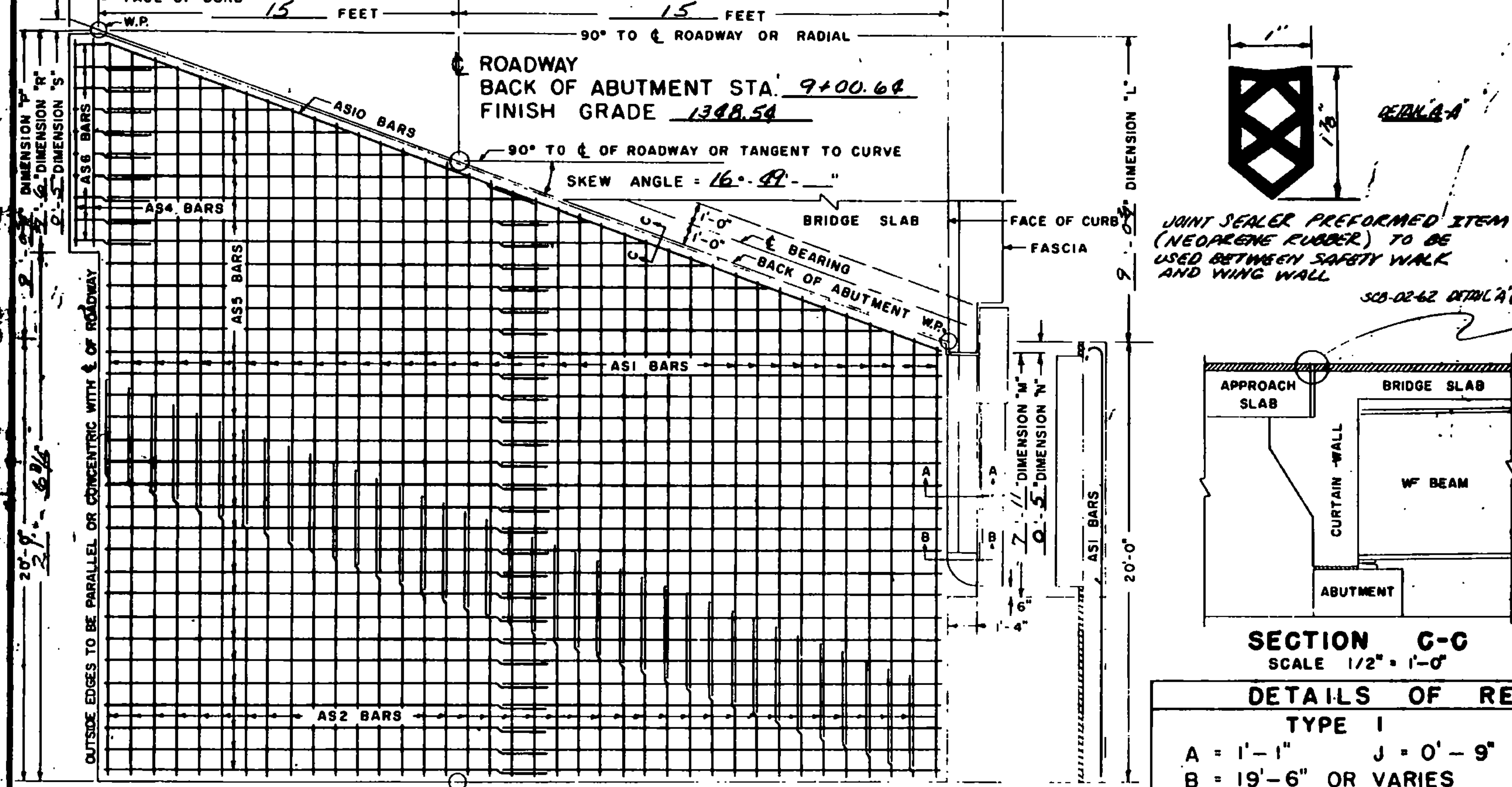
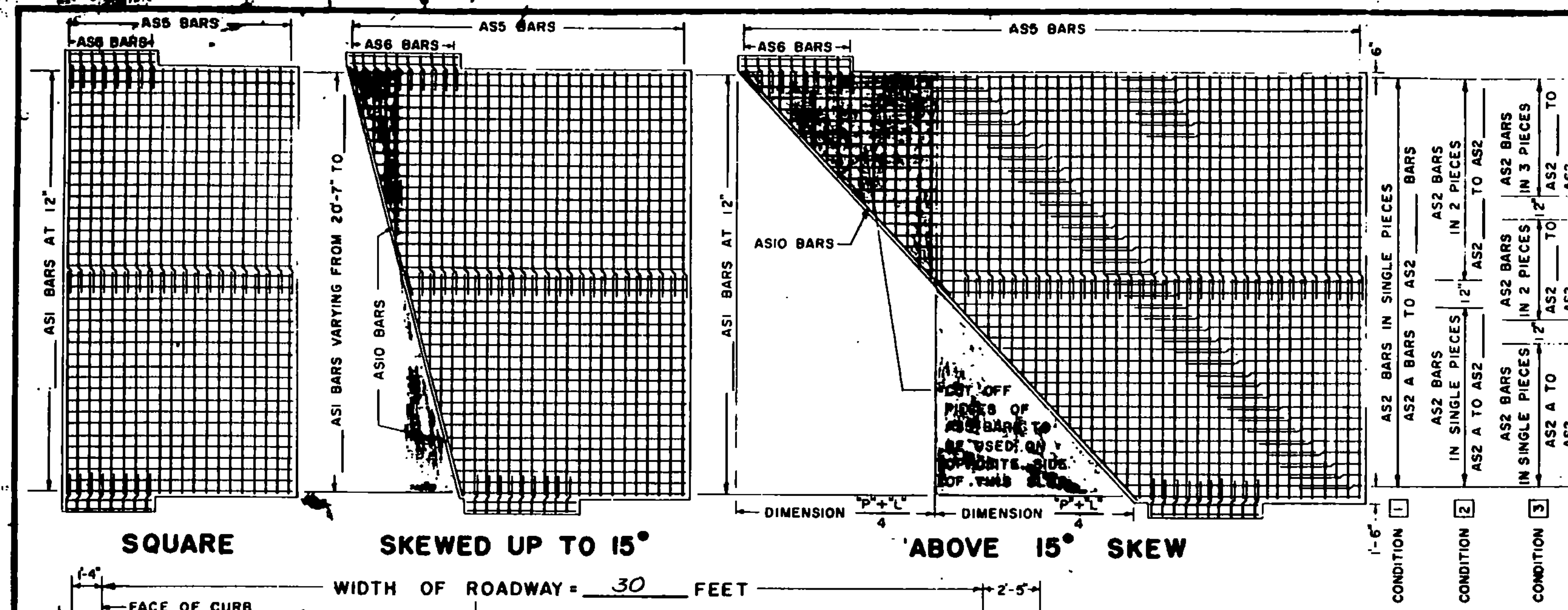
SUPERSTRUCTURE DETAILS
(Branch Brook)

SCALE 1/4" = 1'-0"

SURVEYED BY A. E. WORTH
DRAWN BY J. E. WORTH

SHEET # 40



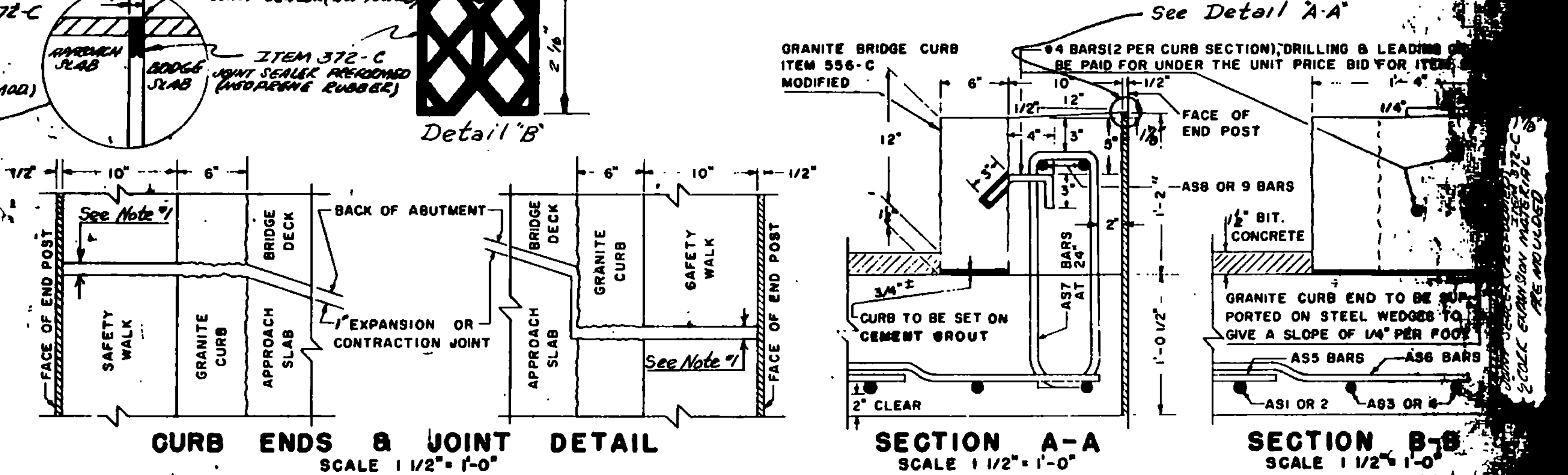


ITEM NO.	ITEM	UNIT	TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	34	34
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS	7	7
401-B	CONCRETE CLASS B (MOD.)	CY.	29	29
402	REINFORCING STEEL	LB.	4360	4360
556-C	GRANITE BRIDGE CURB (MOD.)	LF.	16	16

30' ROADWAY					38' ROADWAY					42' ROADWAY					44' ROADWAY					ROADWAY				
NO.	PIECES	SIZE	LENGTH	MARK	NO.	PIECES	SIZE	LENGTH	MARK	NO.	PIECES	SIZE	LENGTH	MARK	NO.	PIECES	SIZE	LENGTH	MARK	NO.	PIECES	SIZE	LENGTH	MARK
2	10	7'-5"	AS3	STR.	2	10	7'-5"	AS3	STR.	2	10	7'-5"	AS3	STR.	2	10	7'-5"	AS3	STR.	2	10	7'-5"	AS3	STR.
2	10	7'-5"	AS4	STR.	2	10	7'-5"	AS4	STR.	2	10	7'-5"	AS4	STR.	2	10	7'-5"	AS4	STR.	2	10	7'-5"	AS4	STR.
16	5	3'-6"	AS6	STR.	16	5	3'-6"	AS6	STR.	16	5	3'-6"	AS6	STR.	16	5	3'-6"	AS6	STR.	16	5	3'-6"	AS6	STR.
10	5	5'-0"	AS7	S6	10	5	5'-0"	AS7	S6	10	5	5'-0"	AS7	S6	10	5	5'-0"	AS7	S6	10	5	5'-0"	AS7	S6
2	5	5'-0"	AS8	STR.	2	5	5'-0"	AS8	STR.	2	5	5'-0"	AS8	STR.	2	5	5'-0"	AS8	STR.	2	5	5'-0"	AS8	STR.
2	5	5'-0"	AS9	STR.	2	5	5'-0"	AS9	STR.	2	5	5'-0"	AS9	STR.	2	5	5'-0"	AS9	STR.	2	5	5'-0"	AS9	STR.

REMARKS: 1. ASI BAR & DIMENSION VARIES FROM 15'-6" TO 28'-6" 2. 20 + DIMENSION (P+L) ÷ 4 (IN FEET) • NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. 3. 40 + DIMENSION (P+L) ÷ 2 (IN FEET) • NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. 4. THE LENGTH OF AS2 BARS VARIES FROM 15'-6" TO 28'-6". THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1. (FOR CONDITION 2 & 3. SEE REINF. SCHEDULE.)

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAIL. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS, AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1964. DESIGNED FOR NO. 1. Use Item 372-C, Detail 'B', for joint in curb. Omit the Hot Poured Sealer, and place the material flush with the surfaces.



DETAILS OF REINFORCING STEEL				QUANTITY COMPUTATION			
BAR NO.	NO. PIECES	LENGTH	WEIGHT PER FT. IN LBS.	W = WIDTH OF ROADWAY	Z = 20 + DIMENSION (P+L) ÷ 4	T = DIMENSION (P+L) ÷ 2	
ASI	30	25'-1" AVE.	4.303	30	24.53	7.77	
AS2	16	3'-6"	4.303	30	24.53	7.77	BITUMINOUS CONCRETE • W × Z × 0.0092 = TONS 30 × 24.53 × 0.0092 = 7 TONS
AS3	10	5'-0"	4.303	30	24.53	7.77	TAR EMULSION • W × Z × 0.0444 = GALLONS 30 × 24.53 × 0.0444 = 33 GALLONS
AS4	2	7'-0"	4.303	30	24.53	7.77	CONCRETE CLASS B • W × Z × 0.0386 + T × 0.1029 + (T - 1.8333) × 0.0733 = CUBIC YARDS [30 × 24.53 × 0.0386] + [7.77 × 0.1029] + [7.77 - 1.8333] × 0.0733 = 30 CUBIC YARDS
AS5	25	29'-6"	1.043	30	24.53	7.77	GRANITE BRIDGE CURB • 2(T + 0'-3") × LINEAR FEET 2(7.77 + 0.25) = 16 LINEAR FEET
AS6	16	3'-6"	1.043	30	24.53	7.77	BAR LENGTHS: AS3 BARS • DIMENSION "M" - 0'-6"
AS7	10	5'-0"	1.043	30	24.53	7.77	AS4 BARS • DIMENSION "R" - 0'-6"
AS8	2	7'-0"	1.043	30	24.53	7.77	AS6 BARS • 3'-6"
AS9	2	5'-4"	1.043	30	24.53	7.77	AS7 BARS • 5'-0"
AS10	2	30'-10"	1.043	30	24.53	7.77	AS8 BARS • DIMENSION "M" - 2'-2"
				30	24.53	7.77	AS9 BARS • DIMENSION "R" - 2'-2"

REVISIONS AND CORRECTIONS

Required Joint Filler Item 323 - 6-21-63 M

APPROVED

DRAWN BY: R.S. HAUP T NOV. 1960

TRACED BY: R.S. HAUP T NOV. 1960

CHECKED BY: A.H. SMALLEY NOV. 1960

Recommended For Approval

Recommended For Approval

Approved By

DETAILS OF APPROACH SLAB NO. 1

FOR 30 FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 8+76.11

LOCATION BRANCH BROOK

STATE OF VERMONT

DEPARTMENT OF HIGHWAYS

STANDARD STRUCTURE

SB-AS-60

SHEET 20 OF 41

TOWN OF MT. HOLLY

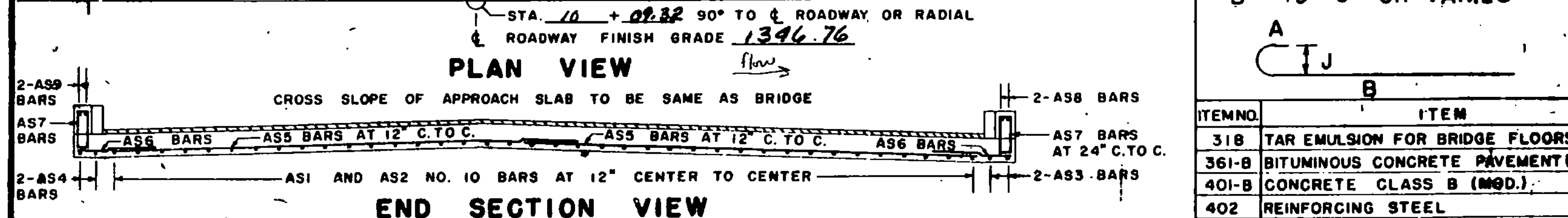
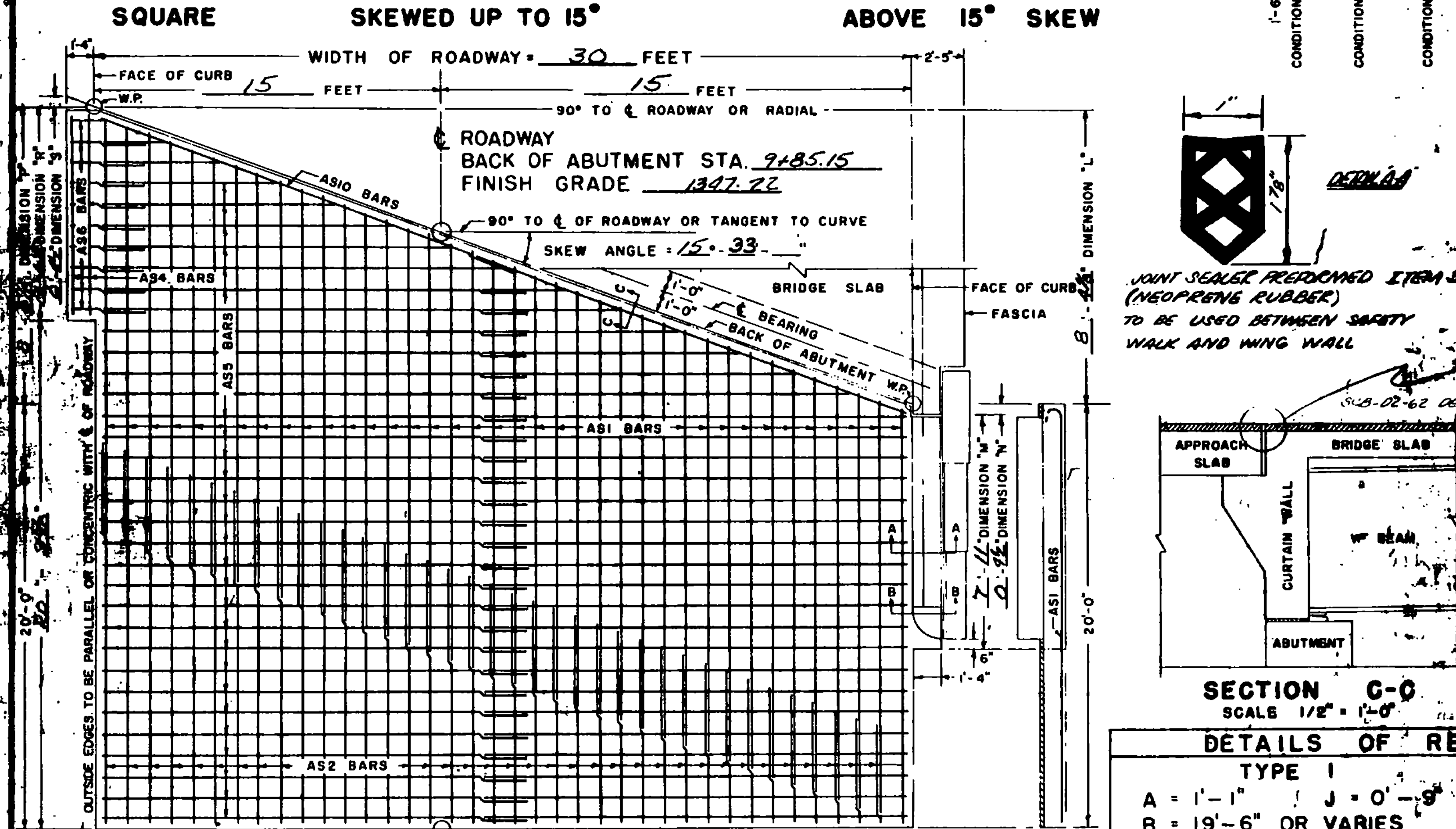
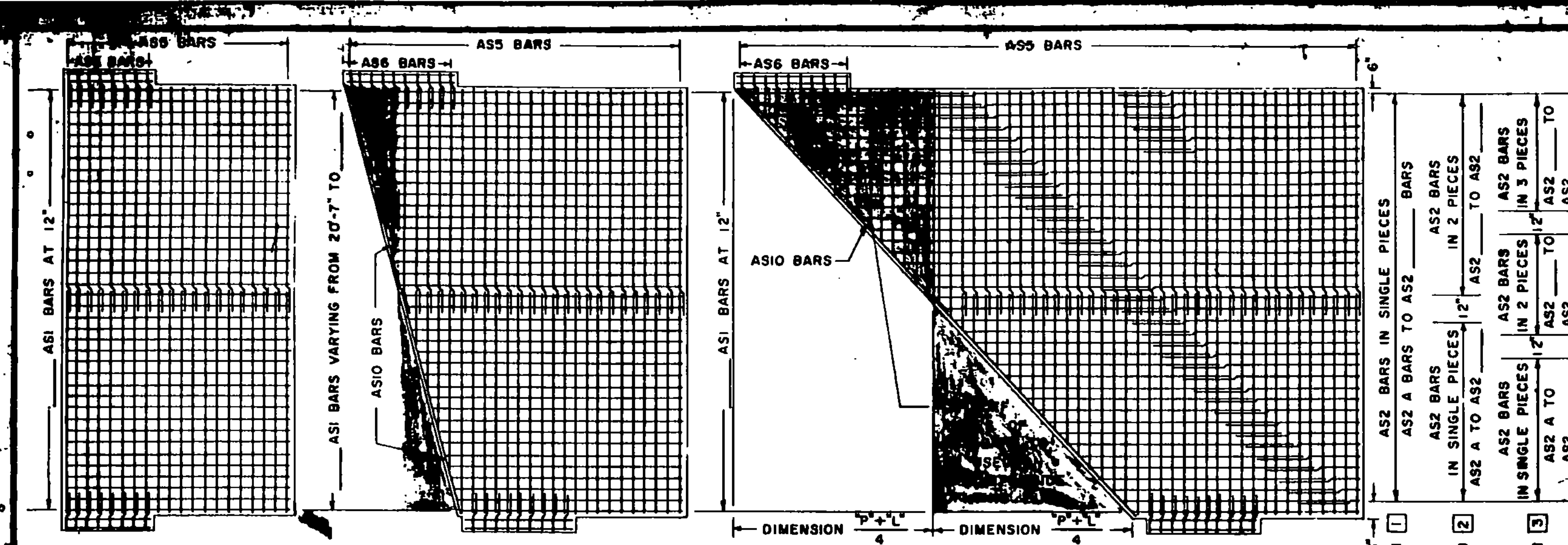
ROUTE NO. VT #10

LOG STA. 5+39

SCALE AS NOTED

DESIGNED BY S.H.S. CHECKED

PROJECT NO. 100-100



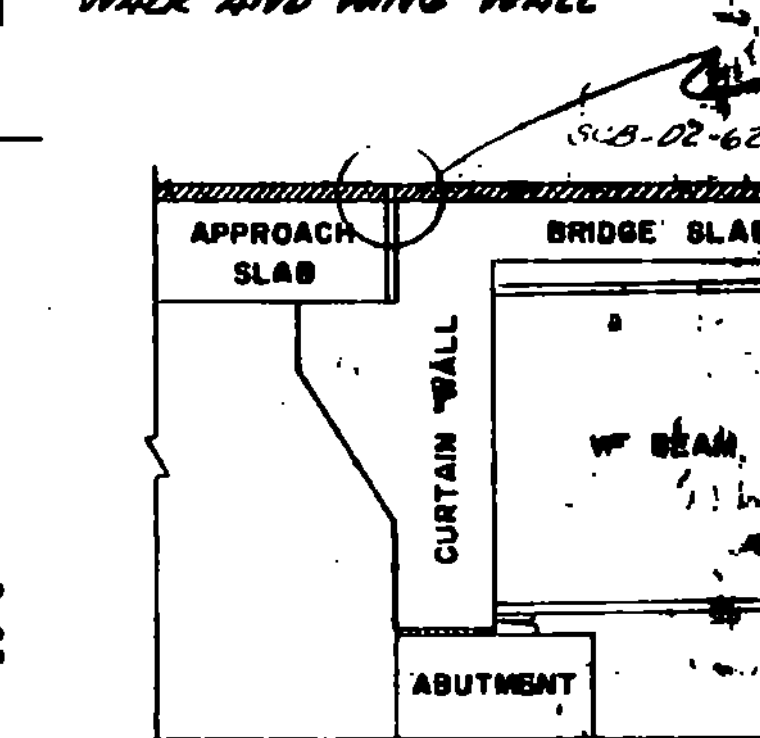
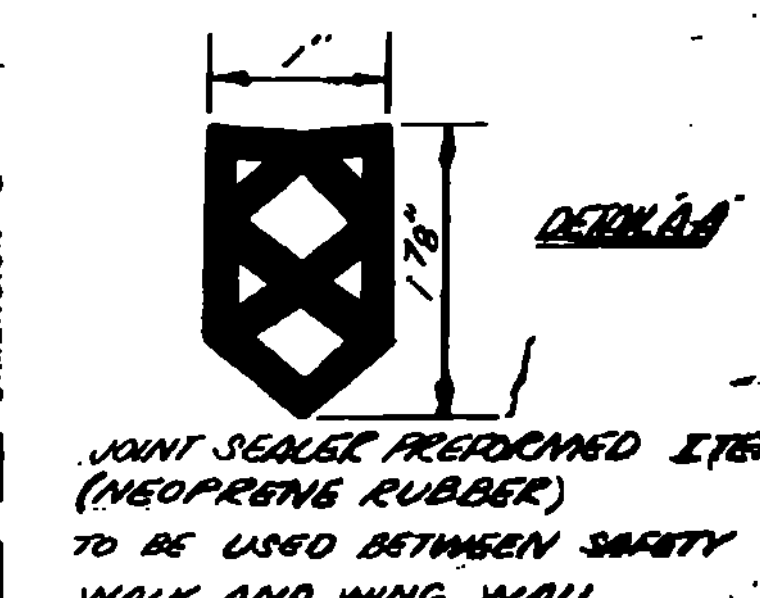
REVISIONS AND CORRECTIONS		APPROVED	
Revised Joint Filler Item 323	6-21-63 M	DRAWN BY:	R.S. HAUT NOV. 1960
		TRACED BY:	R.S. HAUT NOV. 1960
		CHECKED BY:	A.H. SMALLEY NOV. 1960
		Recommended For Approval	12/1/62 18/1/62
		Recommended For Approval	12/1/62 18/1/62
		Approved By:	12/1/62 18/1/62

30' ROADWAY						38' ROADWAY						42' ROADWAY						44' ROADWAY						ROADWAY										
NO.	PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO.	PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO.	PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO.	PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS	NO.	PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED							SQUARE OR SKEWED							SQUARE OR SKEWED							SQUARE OR SKEWED							SQUARE OR SKEWED						
2	10	7'-5"		AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.	
2	10	7'-0"		AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.	
16	5	3'-6"		AS6	STR.			5	3'-6"		AS6	STR.			5	3'-6"		AS6	STR.			5	3'-6"		AS6	STR.			5	3'-6"		AS6	STR.	
10	5	5'-0"		AS7	S6			5	5'-0"		AS7	S6			5	5'-0"		AS7	S6			5	5'-0"		AS7	S6			5	5'-0"		AS7	S6	
2	5	5'-9"		AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.	
2	5	5'-4"		AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.	
SQUARE							SQUARE							SQUARE							SQUARE							SQUARE						
30	10	20'-7"		AS1	I		38	10	20'-7"		AS1	I		42	10	20'-7"		AS1	I		44	10	20'-7"		AS1	I			10	20'-7"		AS1	I	
20	5	29'-6"		AS5	STR.		40	5	19'-9"		AS5	STR.		40	5	21'-9"		AS5	STR.		40	5	22'-9"		AS5	STR.			5			AS5	STR.	
SKEWED UP TO 15°							SKEWED UP TO 15°							SKEWED UP TO 15°							SKEWED UP TO 15°							SKEWED UP TO 15°						
30	10		Ave.	AS1	I	1.	38	10		Ave.	AS1	I	1.	42	10		Ave.	AS1	I	1.	44	10		Ave.	AS1	I	1.		10		Ave.	AS1	I	1.
	5	29'-6"		AS5	STR.	2.		5	19'-9"		AS5	STR.	3.		5	21'-9"		AS5	STR.	3.		5	22'-9"		AS5	STR.	3.		5			AS5	STR.	2.
ALL SKEWED SPANS							ALL SKEWED SPANS							ALL SKEWED SPANS							ALL SKEWED SPANS							ALL SKEWED SPANS						
2	5	30'-8"		AS10	STR.			5			AS10	STR.			5			AS10	STR.			5			AS10	STR.			5			AS10	STR.	
ABOVE 15° SKEW							ABOVE 15° SKEW							ABOVE 15° SKEW							ABOVE 15° SKEW							ABOVE 15° SKEW						
30	10	24'-9"	Ave.	AS1	I	1.	38	10	20'-7"		AS1	I		42	10	20'-7"		AS1	I		44	10	20'-7"		AS1	I			10	20'-7"		AS1	I	
20	5		Ave.	AS5	STR.		37	10		Ave.	AS2	STR.	4.	41	10		Ave.	AS2	STR.	4.	43	10		Ave.	AS2	STR.	4.		10		Ave.	AS2	STR.	
25	5	29'-6"		AS5	STR.	2		5	19'-9"		AS5	STR.	3.		5	21'-9"		AS5	STR.	3.		5	22'-9"		AS5	STR.	3.		5			AS5	STR.	

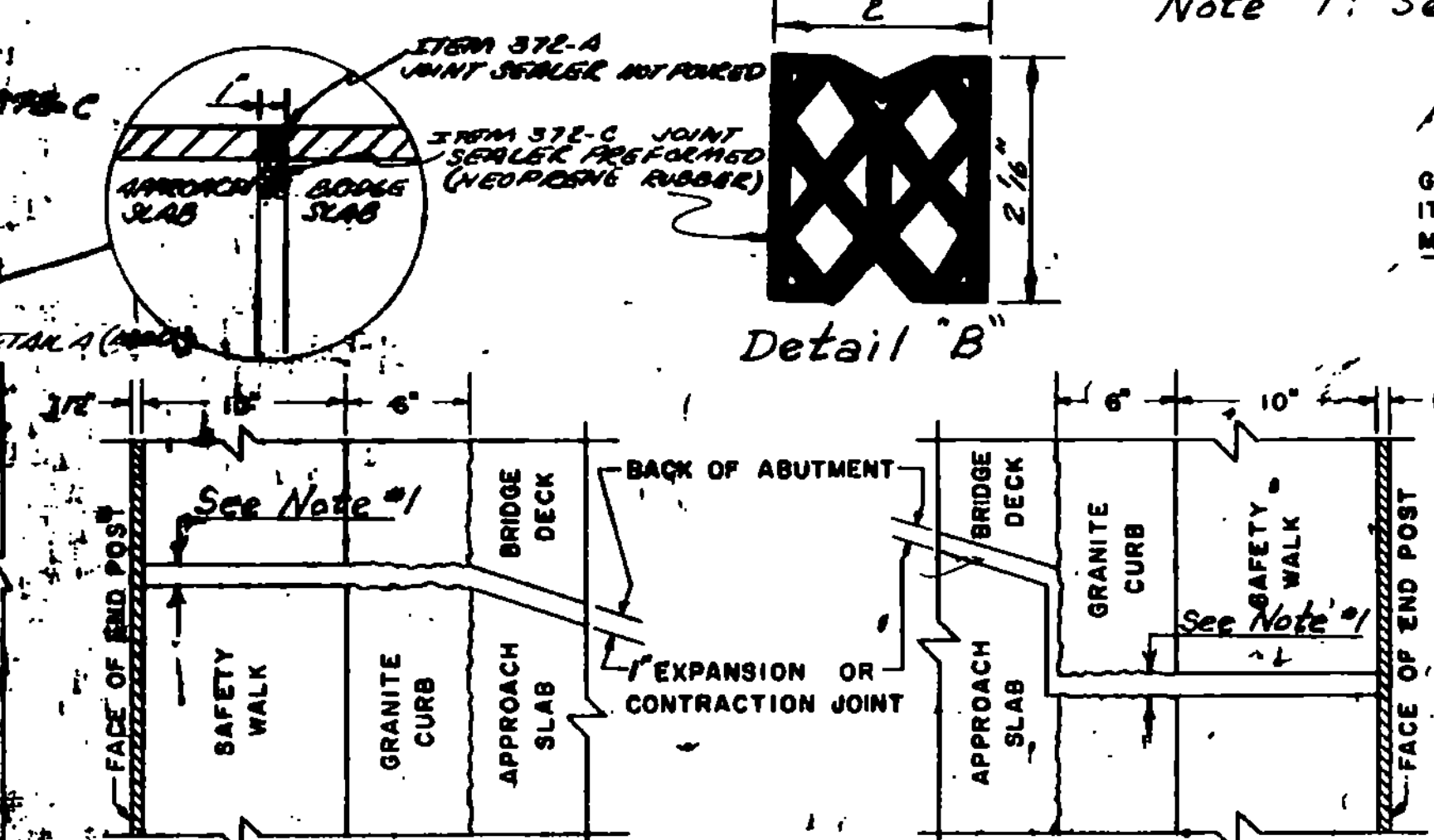
REMARKS: ASI BAR "B" DIMENSION VARIES FROM 19'-6" TO 27'-10" 20' + DIMENSION (P+L)/4 (IN FEET) * NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PEEPS OPPOSITE HALF OF SLAB. 40' + DIMENSION (P+L)/2 (IN FEET) * NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PEEPS ON OPPOSITE HALF OF SLAB. THE LENGTH OF AS2 BARS VARIES FROM TO THE AS2 BARS MAY BE DIVIDED INTO TWO OR MORE PIECES, AS MAY BE NECESSARY, TO LIMIT THE MAXIMUM BAR LENGTH TO 30 FEET. THE LOCATION OF SPLICES IS LEFT TO THE OPTION OF THE DESIGNER. THE NO. PIECES SHOWN ARE FOR CONDITION 1 (FOR CONDITION 2, B, 3, SEE REMF. SHEET).

GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETE SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS, AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1962. DESIGNED FOR H20.

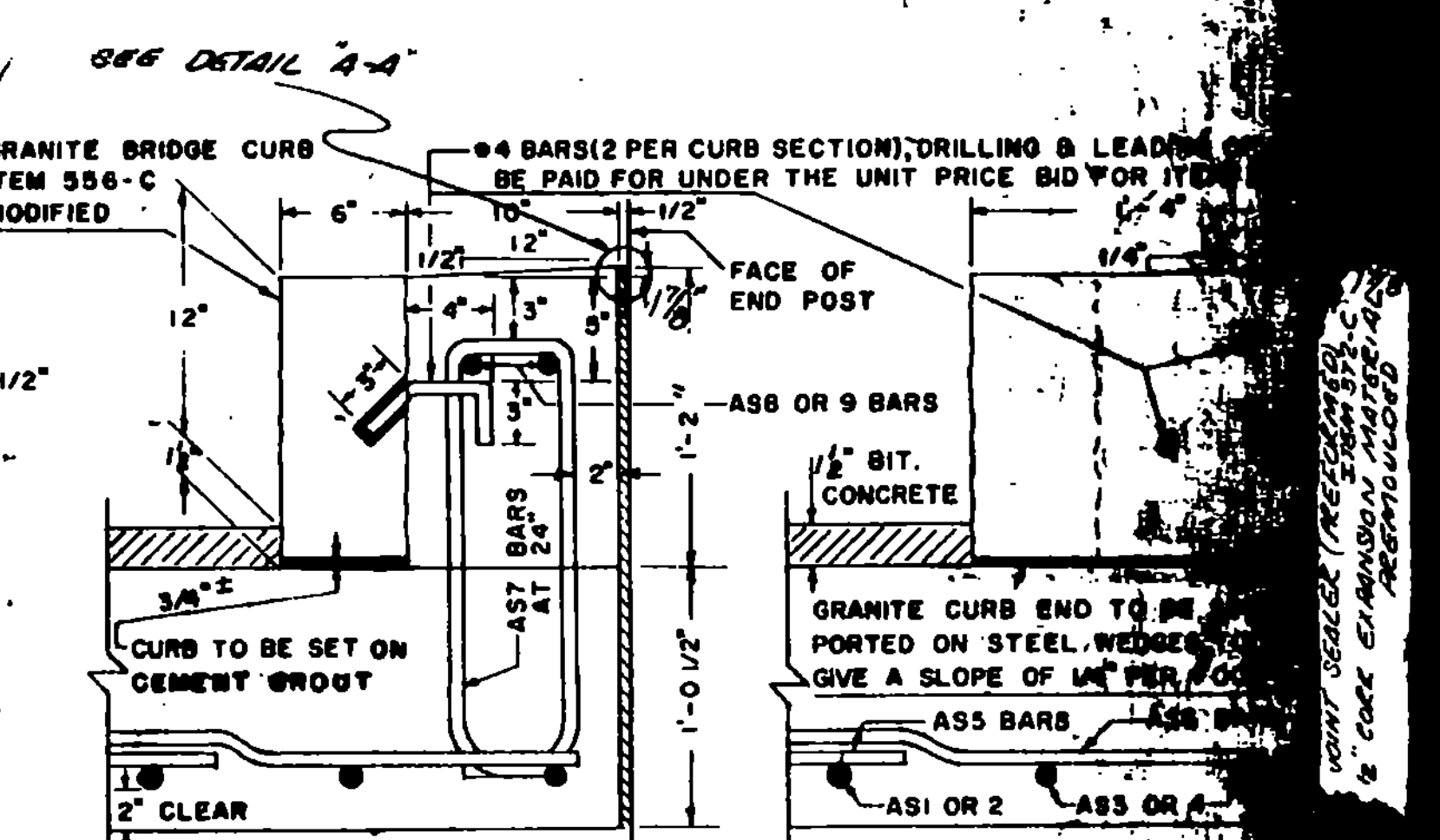
Note #1: See Note #1, Br. 5 of 11



SECTION C-C SCALE 1/2" = 1'-0"



CURB ENDS & JOINT DETAIL SCALE 1/2" = 1'-0"



SECTION A-A SCALE 1/2" = 1'-0"

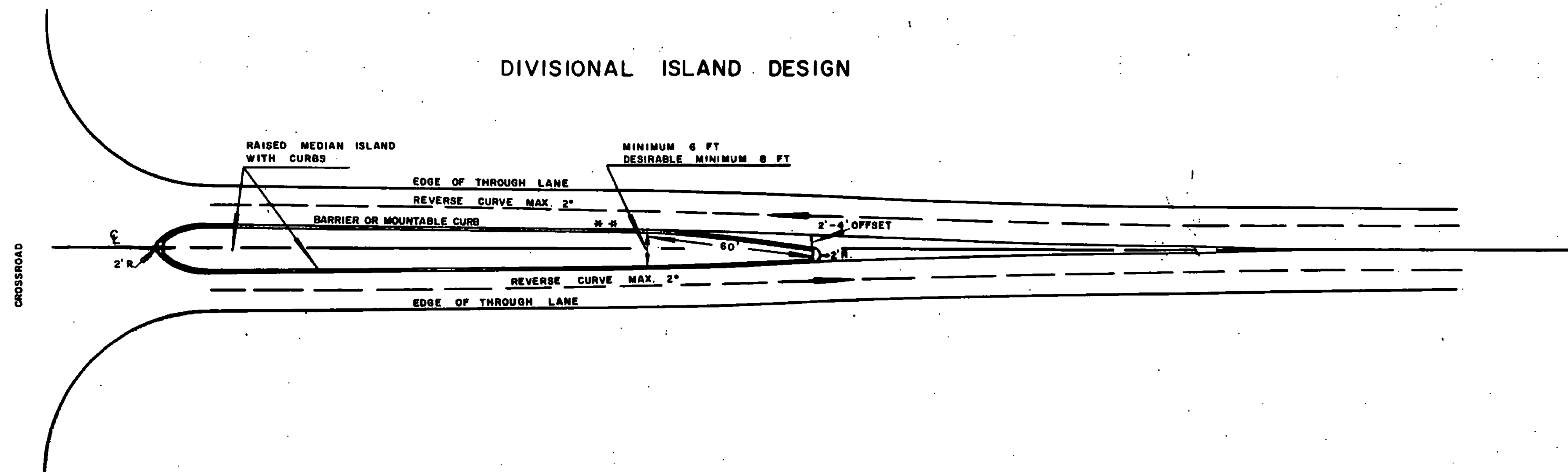
JOINT SEALER (NEOPRENE RUBBER) TO BE USED BETWEEN SAFETY WALK AND WING WALL

SCALE 1/2" = 1'-0"										SCALE 1/2" = 1'-0"																																																																																														
DETAILS OF REINFORCING BARS															REINFORCING STEEL																																																																																									
TYPE I					TYPE S6					C																																																																																														
A = 1'-1" J = 0'-9"					A = 0'-6" B = 1'-9" C = 0'-6" D = 1'-9" G = 0'-6"																																																																																																			
B = 19'-6" OR VARIES																																																																																																								
																																																																																																								
ITEM NO.															ITEM															UNIT															TOTAL															FINAL																																												
318															TAR EMULSION FOR BRIDGE FLOORS															GAL.																														33																																												
361-B															BITUMINOUS CONCRETE PAVEMENT (MOD.)															TONS																														7																																												
401-B															CONCRETE CLASS B (MOD.)															CY.																														28																																												
402															REINFORCING STEEL															LB.																														4281																																												
556-C															GRANITE BRIDGE CURB (MOD.)															LF.																														164																																												

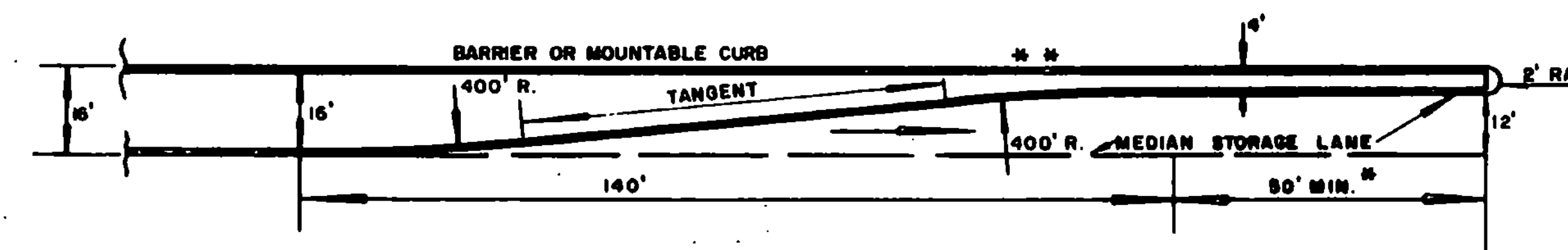
DETAILS OF APPROACH SLAB NO. 2 FOR 30 FOOT BRIDGE TO BE USED FOR BRIDGE AT STATION 10+09.35 LOCATION BRANCH BROOK

STATE OF VERMONT DEPARTMENT OF HIGHWAYS STANDARD STRUCTURE SB-AS-62 SHEET 21 OF 40 TOWN OF MT. HOLLY ROUTE NO. 10 LOG STA. 554.5

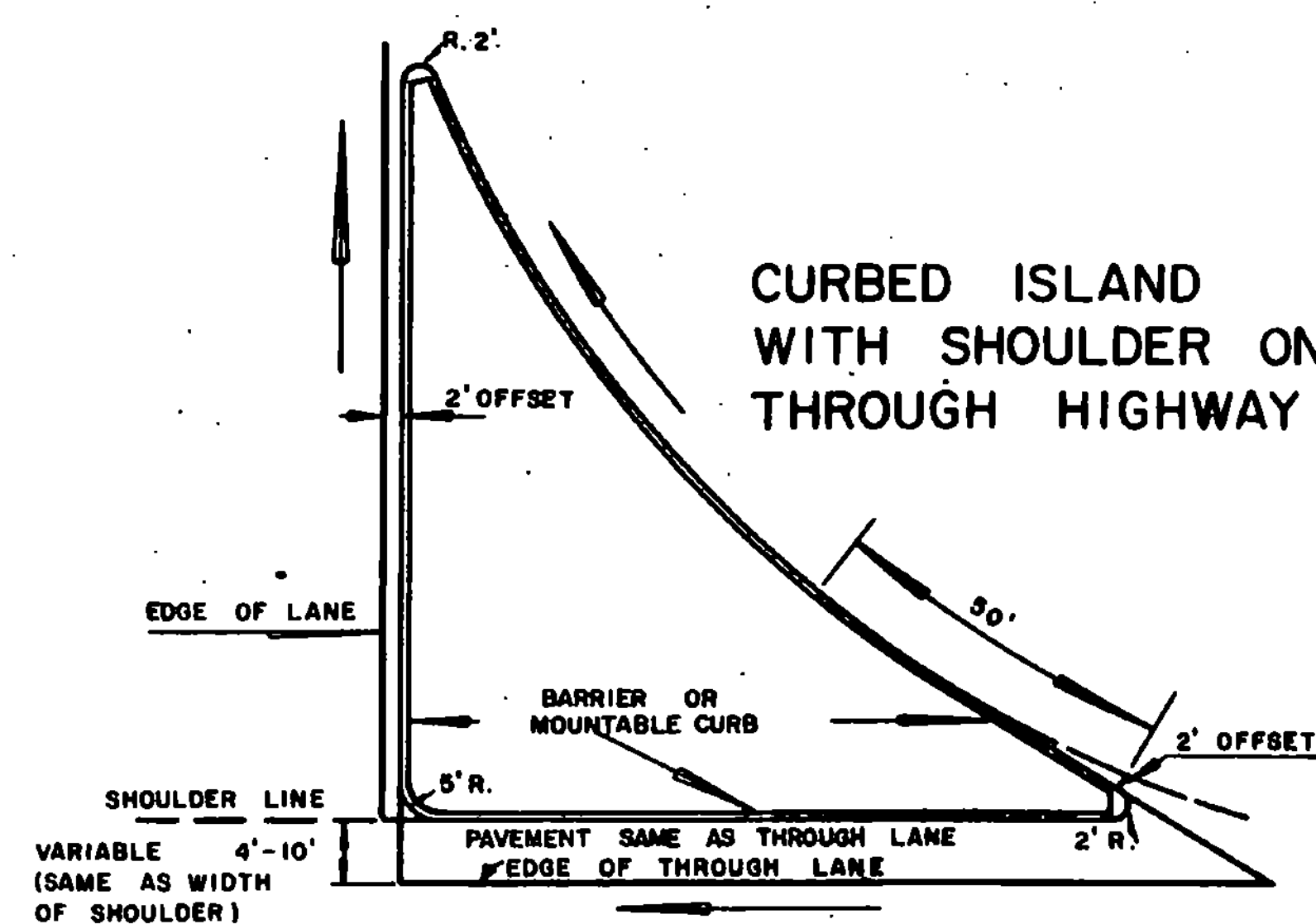
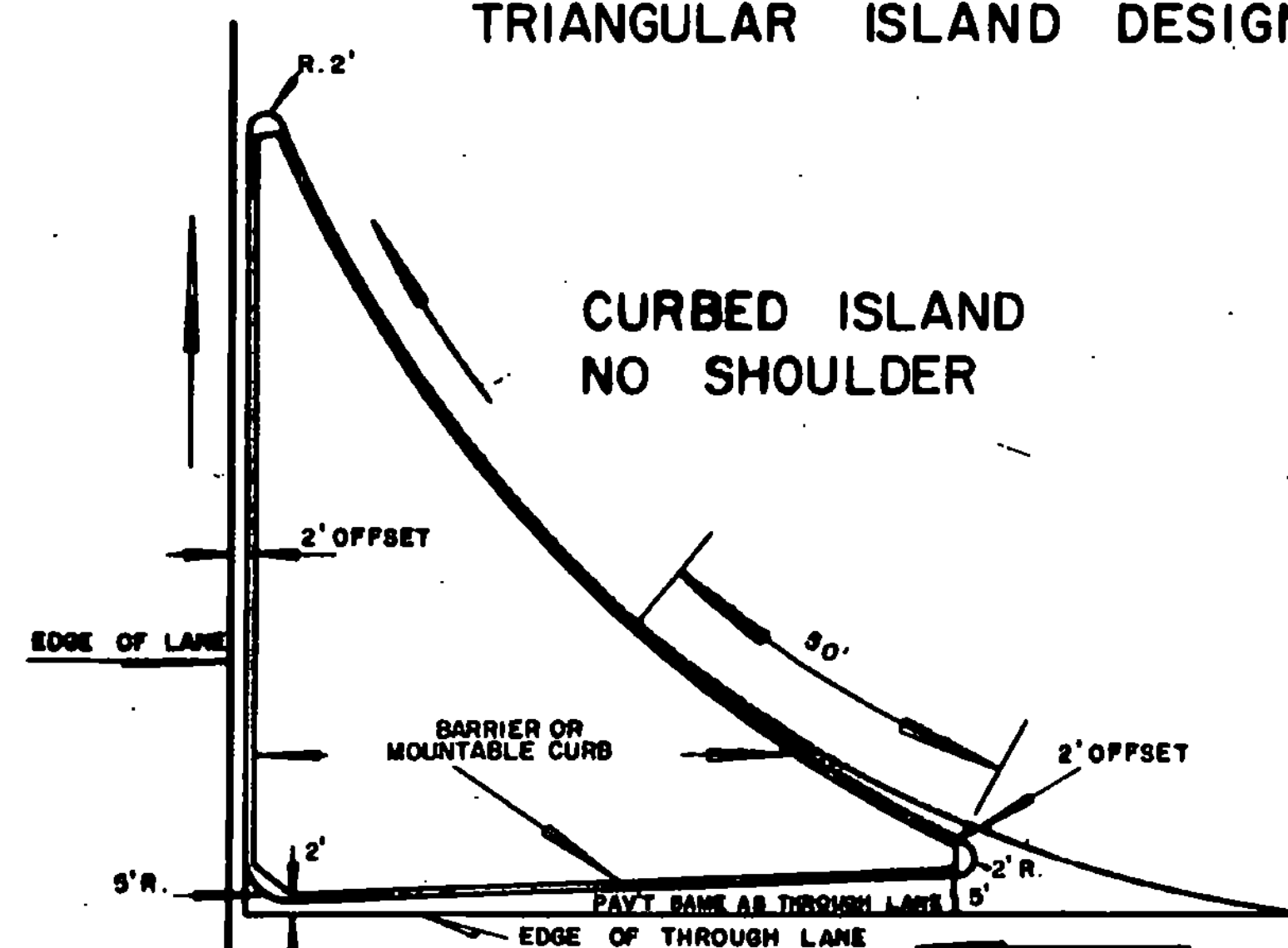
DIVISIONAL ISLAND DESIGN



DESIGN OF MEDIAN STORAGE LANE TAPER (SEE NOTE #3)



TRIANGULAR ISLAND DESIGN



- * REFER TO A.A.S.H.O. POLICY ON GEOMETRIC DESIGN OF RURAL HIGHWAYS PAGE 433
- * BARRIER CURB TO BE USED IN URBAN AREAS WHERE PEDESTRIAN MOVEMENT ACROSS MEDIAN IS HEAVY. OTHERWISE MOUNTABLE CURB TO BE USED.
- WHERE THROUGH TRAFFIC VOLUMES AND SPEEDS ARE HIGH, THE MEDIAN LANE AND TAPER SHALL HAVE AT LEAST THE LENGTH SHOWN IN TABLE VII - 10, PAGE 351 A.A.S.H.O. POLICY ON GEOMETRIC DESIGN OF RURAL HIGHWAYS AND THE VALUES GIVEN FOR A STOP CONDITION SHALL APPLY. IF THE LEFT TURNING VOLUME IS HIGH, ADDITIONAL STORAGE LENGTH SHALL BE PROVIDED.

REVISIONS AND CORRECTIONS

APPROVED

DATE *December 14, 1971*

R. H. Small
CHIEF ENGINEER

E. J. Stokney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

DRAWN: J.O.C.
TRACED: GUS AJA

DIVISIONAL ISLAND, STORAGE LANES, AND TRIANGULAR ISLAND DESIGNS

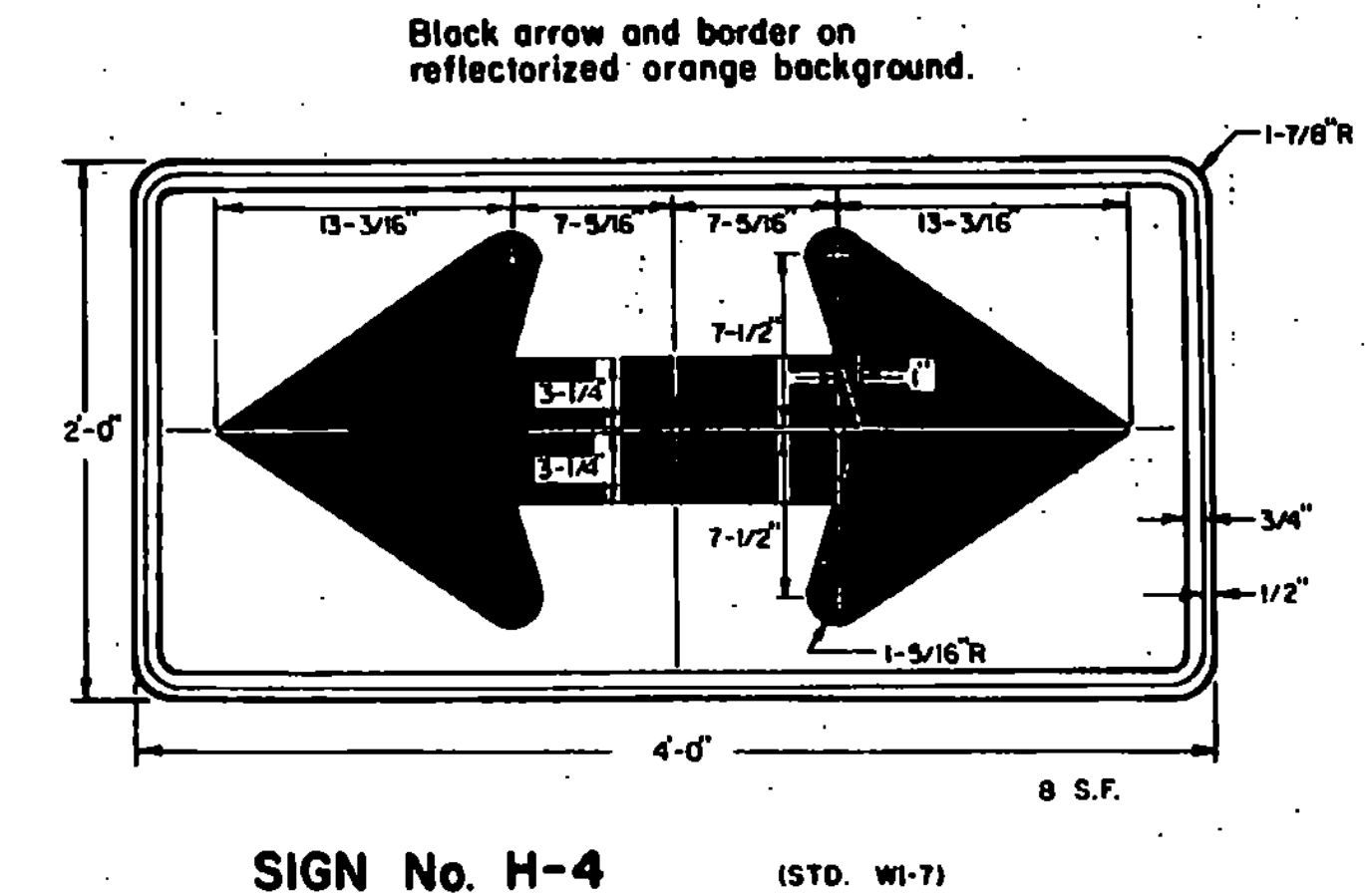
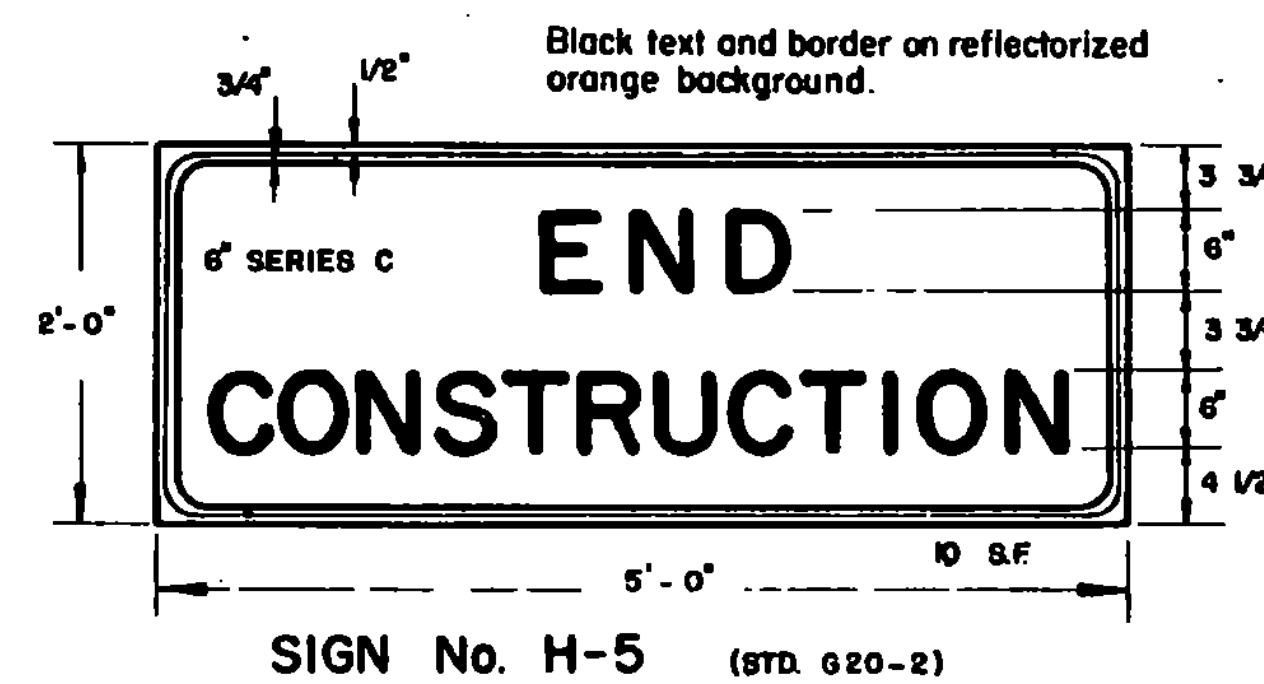
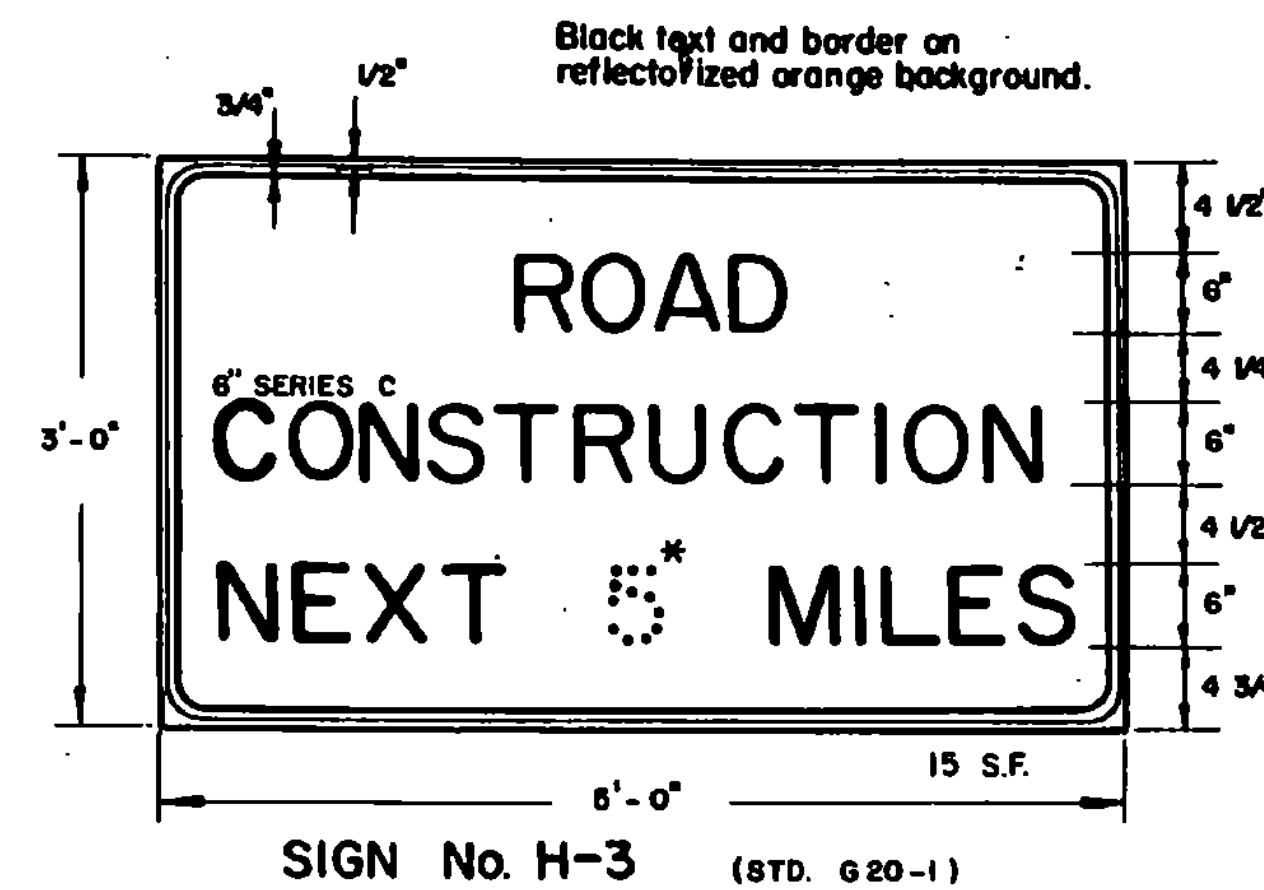
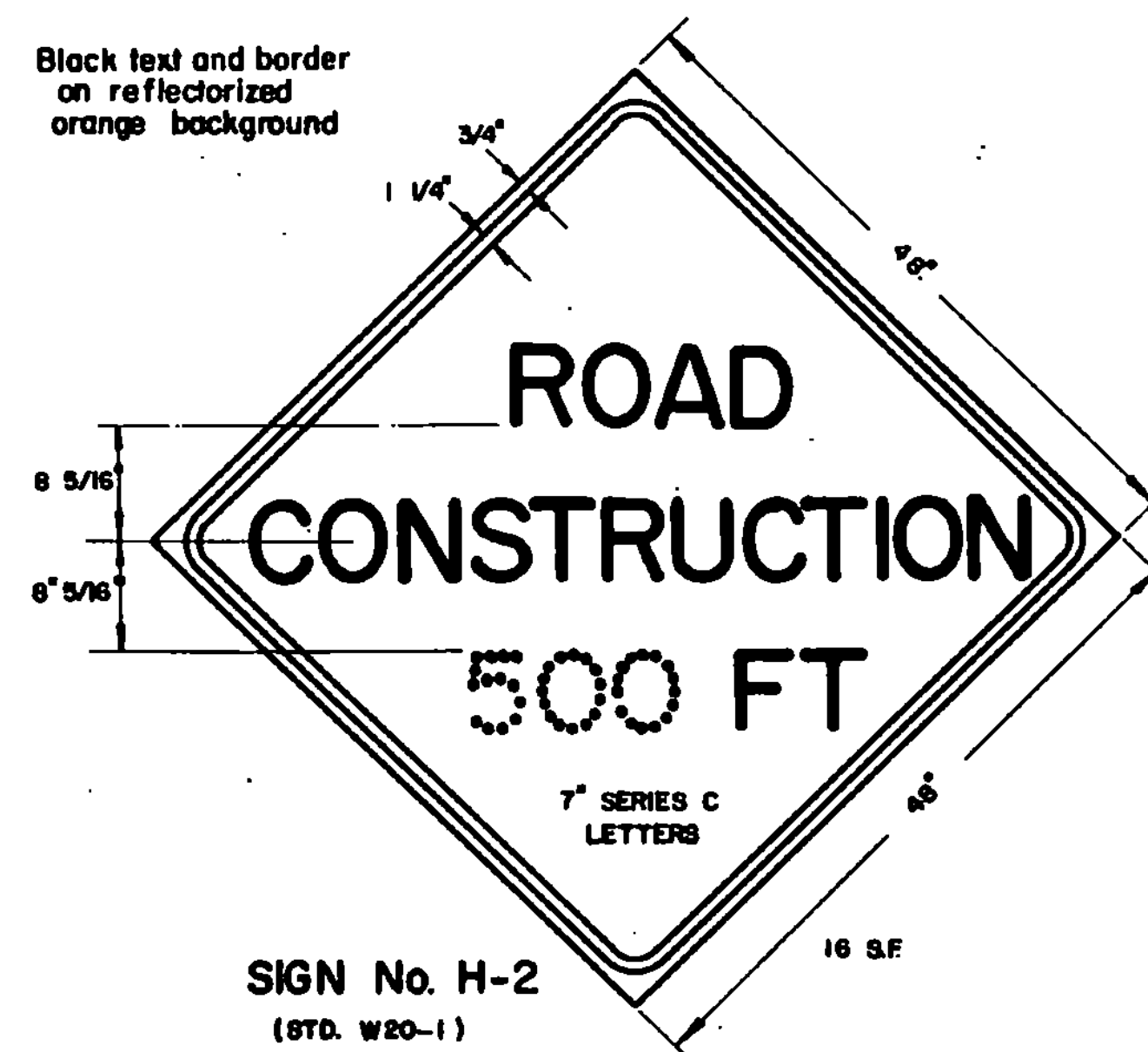
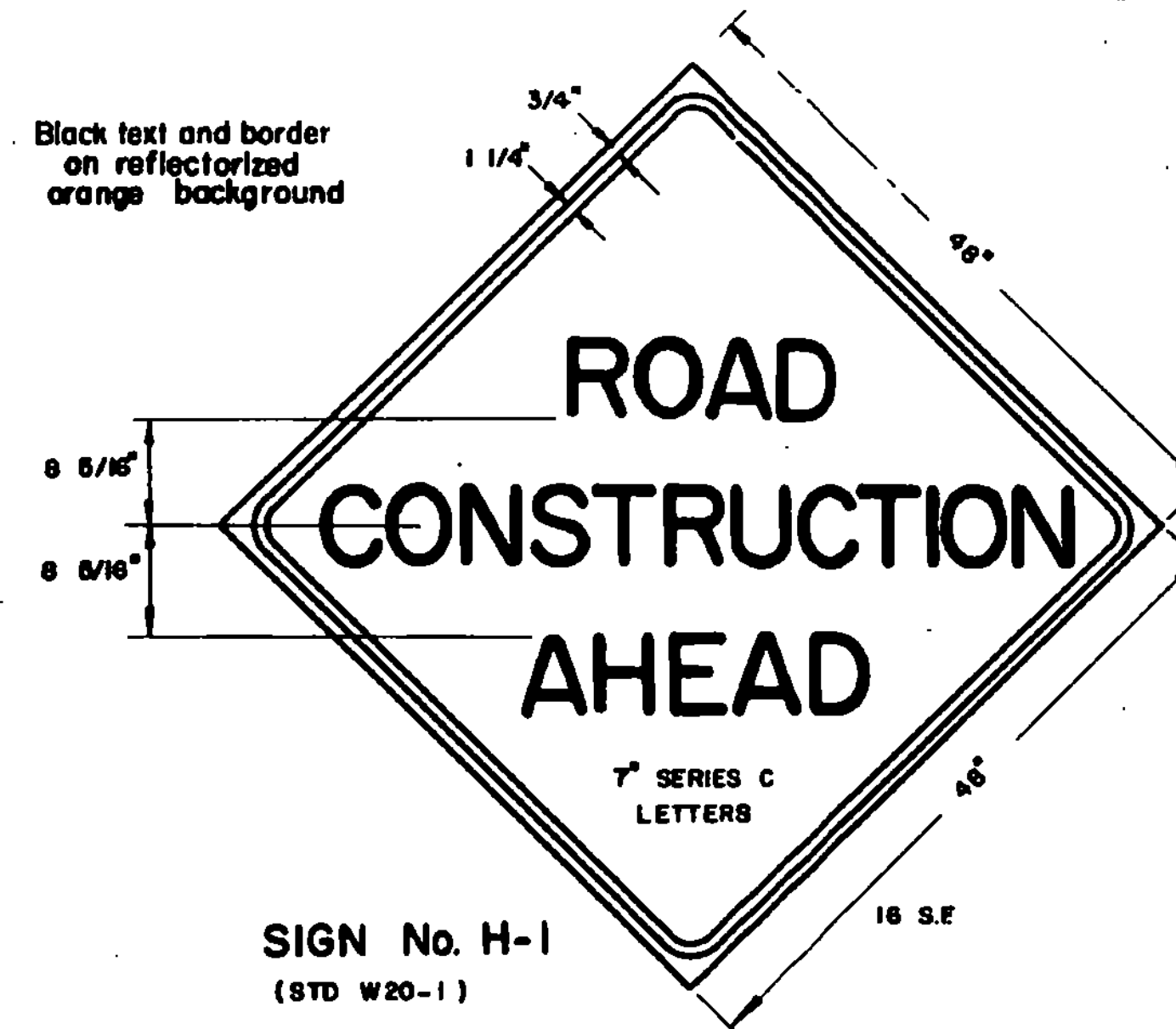


DEPARTMENT
OF HIGHWAYS
STANDARD

B-16

SIGN H-3 IS TO BE USED WHEN PROJECT LENGTH EXCEEDS 2 MILES, OR AS REQUESTED BY THE RESIDENT ENGINEER. THE TEXT MAY BE AS SHOWN OR MAY READ AS FOLLOWS "CONSTRUCTION AREA NEXT — MILES"

* Show mileage to nearest 1/4 mile



The road construction approach 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.

NOTES

LOCATION

Construction approach signs shall be located as detailed on this sheet or 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 of the highway and the character of the roadsides. The location measurements on this sheet are intended to indicate the sequence to be followed, and the minimum spacing to be observed by the Engineer in determining exact locations.

DESIGN

The designs of the signs shall conform with the details shown on this sheet and with the standards prescribed in the Manual on Uniform Traffic Control Devices prepared by National Joint Committee on Uniform Traffic Control Devices.

MATERIALS

The signs shall be of metal, wood, plywood, hardboard or any other material satisfactory to the Engineer. No material will be approved that will deteriorate by exposure to the weather during the required life of the sign.

REFLECTORIZATION

All reflectorized material shall consist of encapsulated lens reflective sheeting.

INSTALLATION

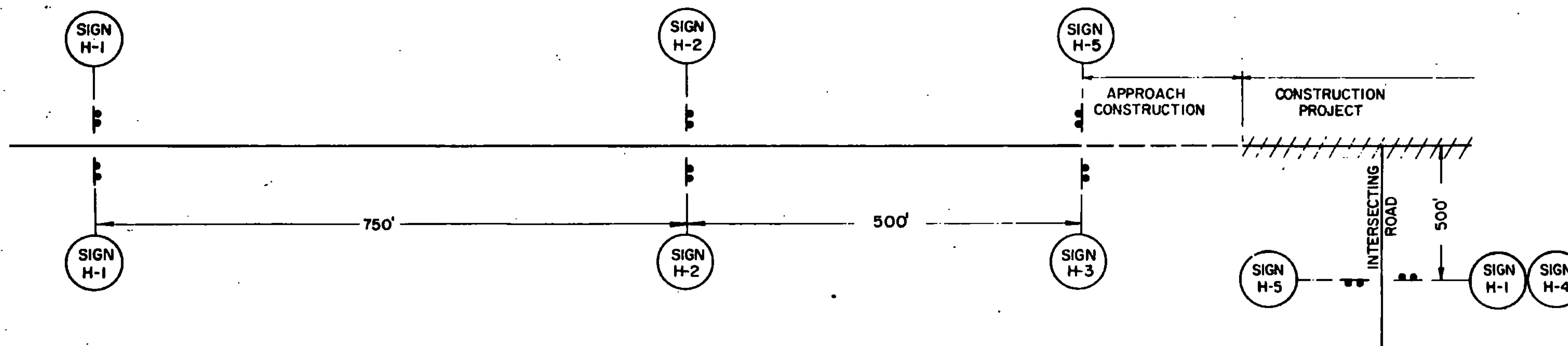
The signs shall be in place at the time the project officially commences. Each sign shall be erected in a neat and workmanlike manner on wood or metal posts set securely in the ground. The bottom of a sign shall be at least 5 feet above road level, and the nearest edge of a sign shall be at least 6 feet outside the shoulder point or 2 feet outside guard rail, curbing or sidewalk. Posts and signs shall be braced or reinforced in back as necessary. The installation of signs shall be subject to approval of the Engineer. In urban areas, the bottom of the sign shall be at least 7' above the sidewalk.

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, erecting, maintaining and removing all construction approach signs will be considered subsidiary work pertaining to the project as a whole and shall be included in the contract unit price bid for various items involved in the contract. In all phases of construction of approach signing, the requirements set forth in the Manual on Uniform Traffic Control Devices shall be met (See Standard Specifications, Section 107, Article 107.08 Traffic Control Devices).

When project is closed down for temporary periods the signs shall be covered in a workmanlike manner.



REVISIONS AND CORRECTIONS

SEPT. 11, 1973 - REVISED PER ORDER OF FHWA, SEPT. 11, 1973

OCT. 19, 1973 - SIGN H-4 REMOVED.

MAY 14, 1974 - REFLECTIVE MATERIAL CHANGE

JUNE 7, 1977 - REFLECTIVE MATERIAL NOTE CHANGED.

DEC. 18, 1978 - ILLUMINATION DELETED.

DEC. 17, 1979 - SIGN H-3 REVISED, SIGN H-4 ADDED.

MAR. 4, 1981 - SIGN H-3 TEXT CHANGED, NOTE ADDED.

FEB. 3, 1988 - UPDATED TO 1986 SPECIFICATIONS

APPROVED
DATE

R. H. Arnold
CHIEF ENGINEER

E. H. Stickney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

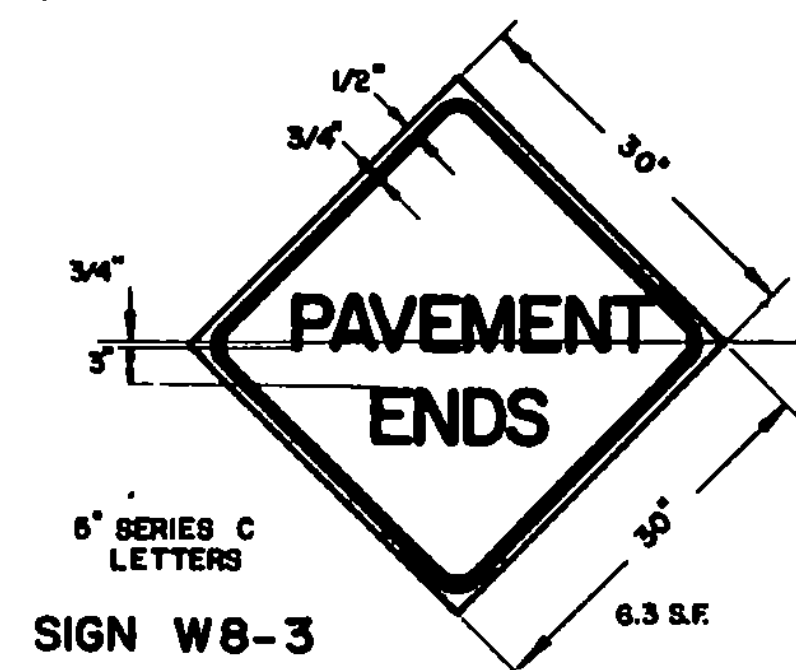
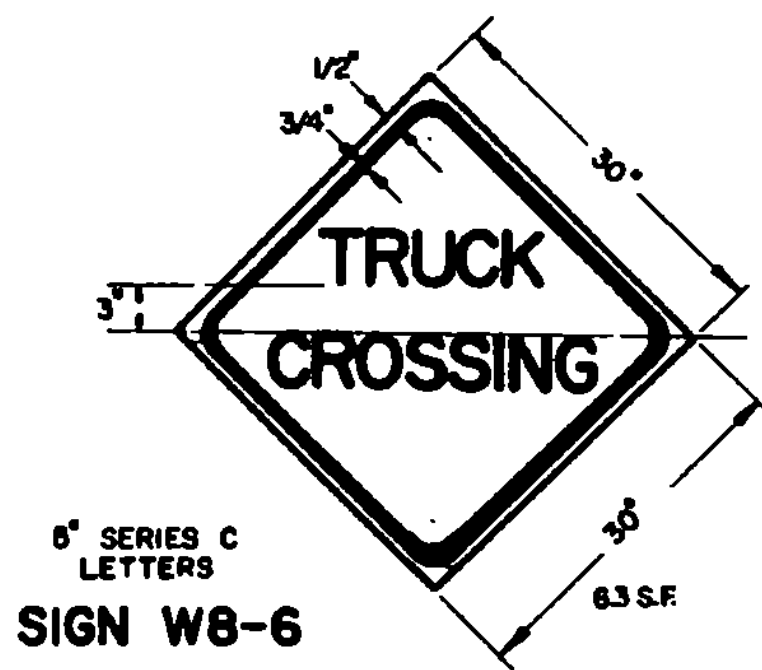
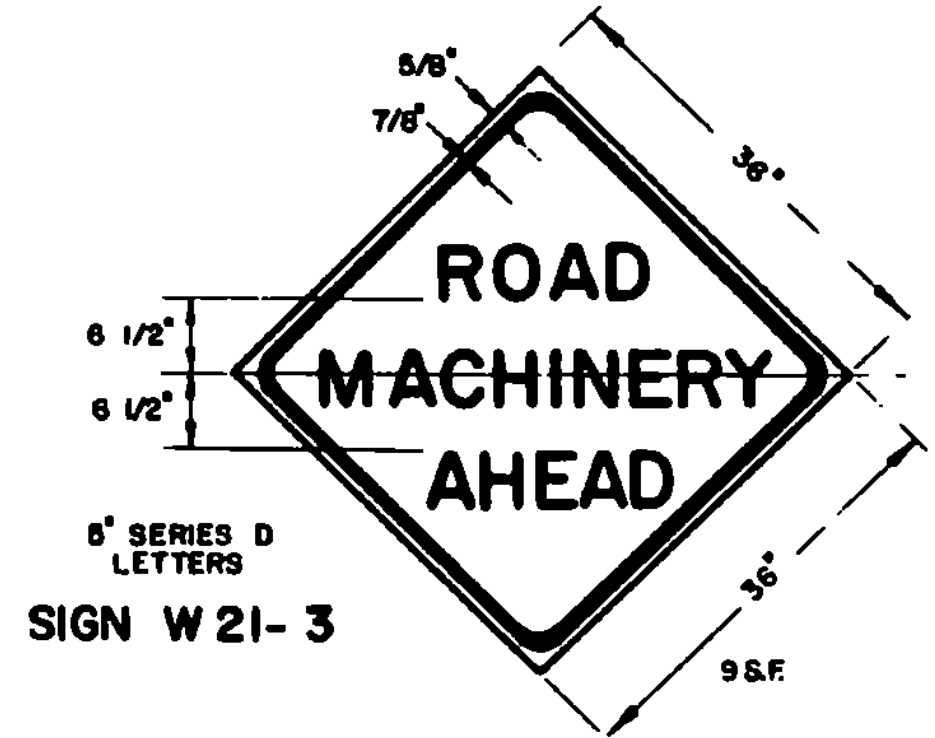
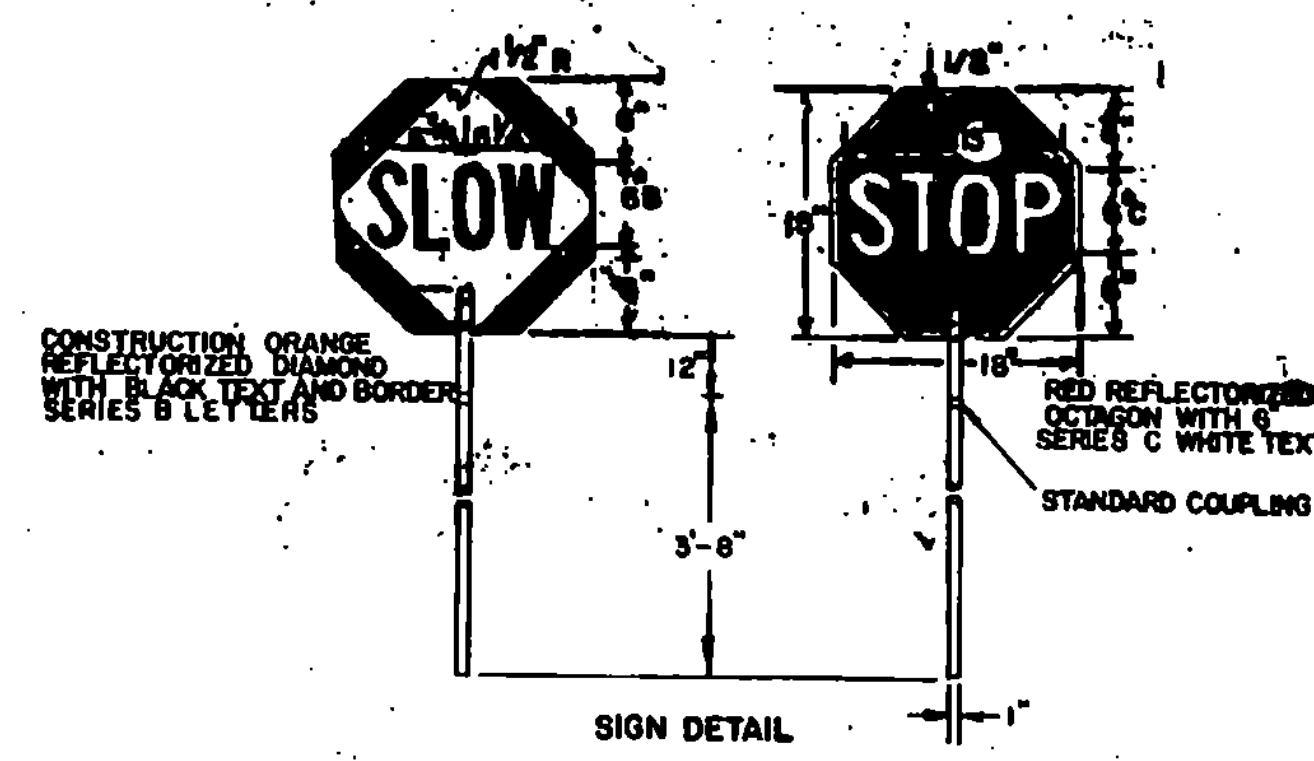
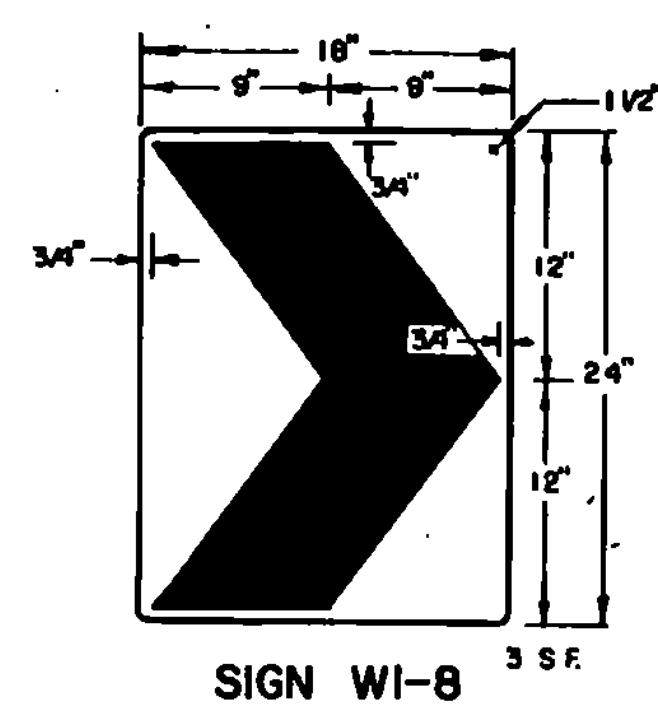
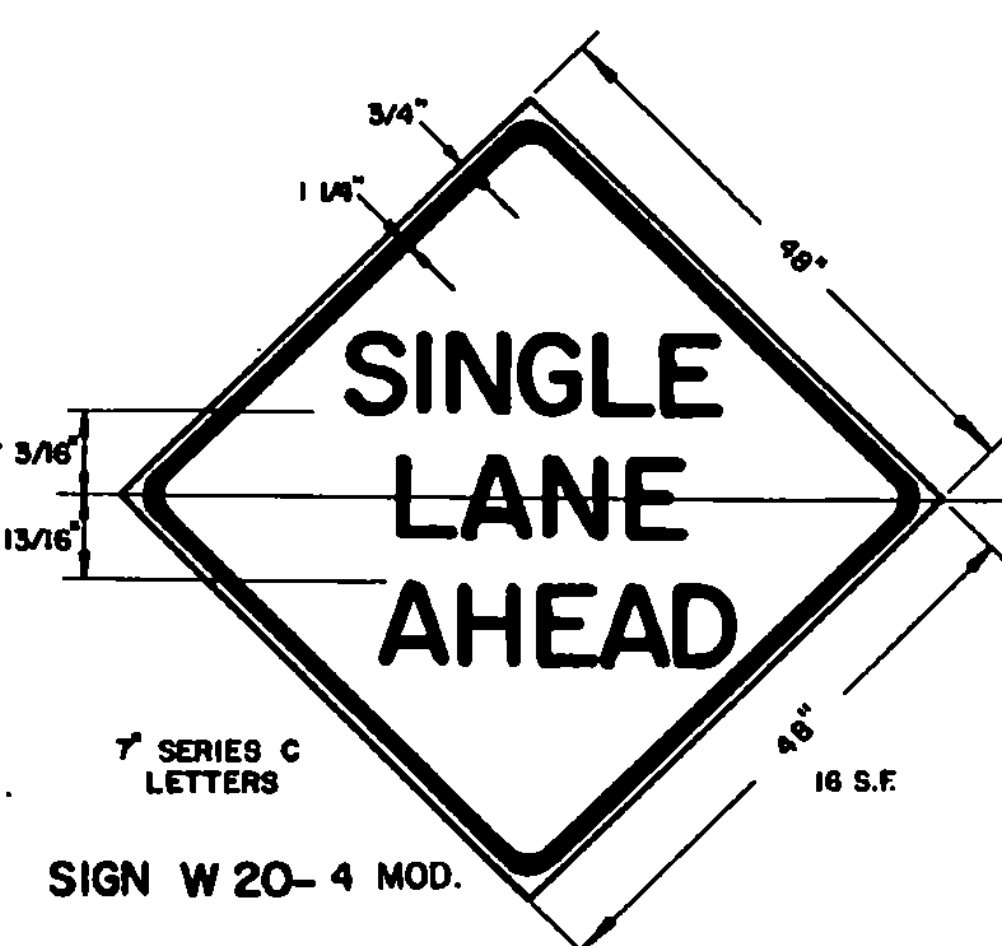
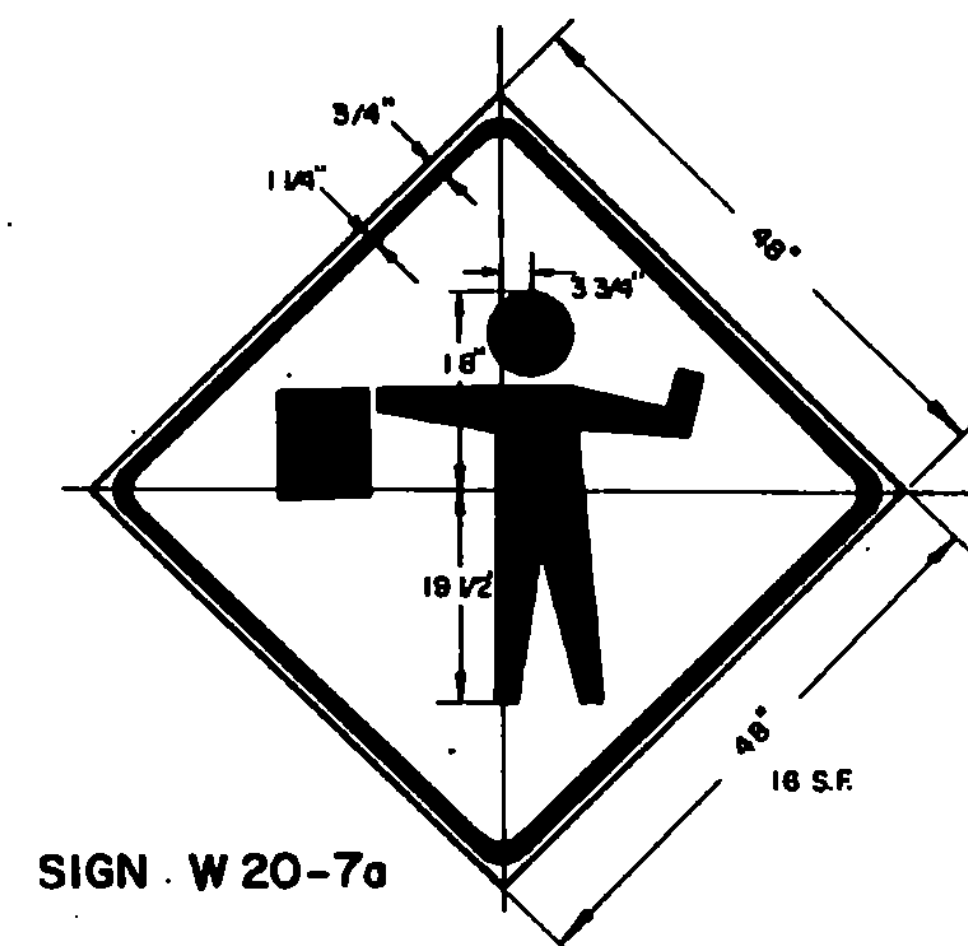
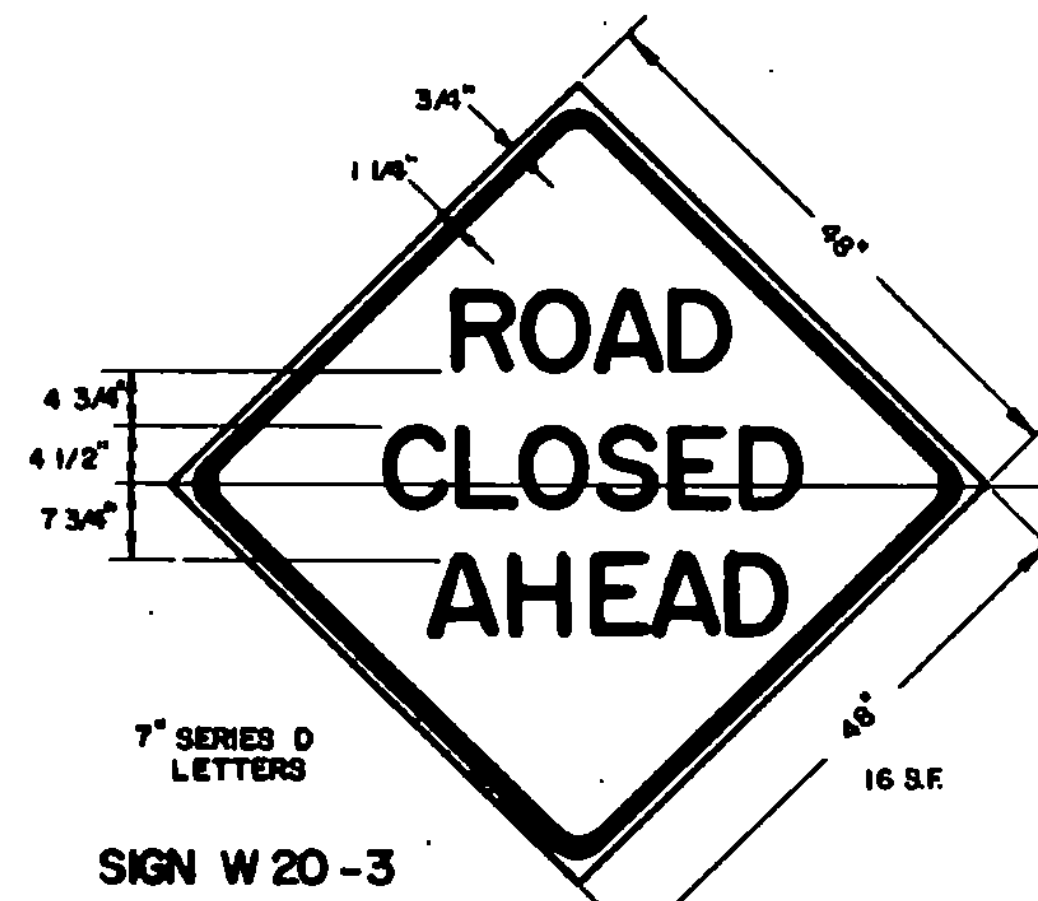
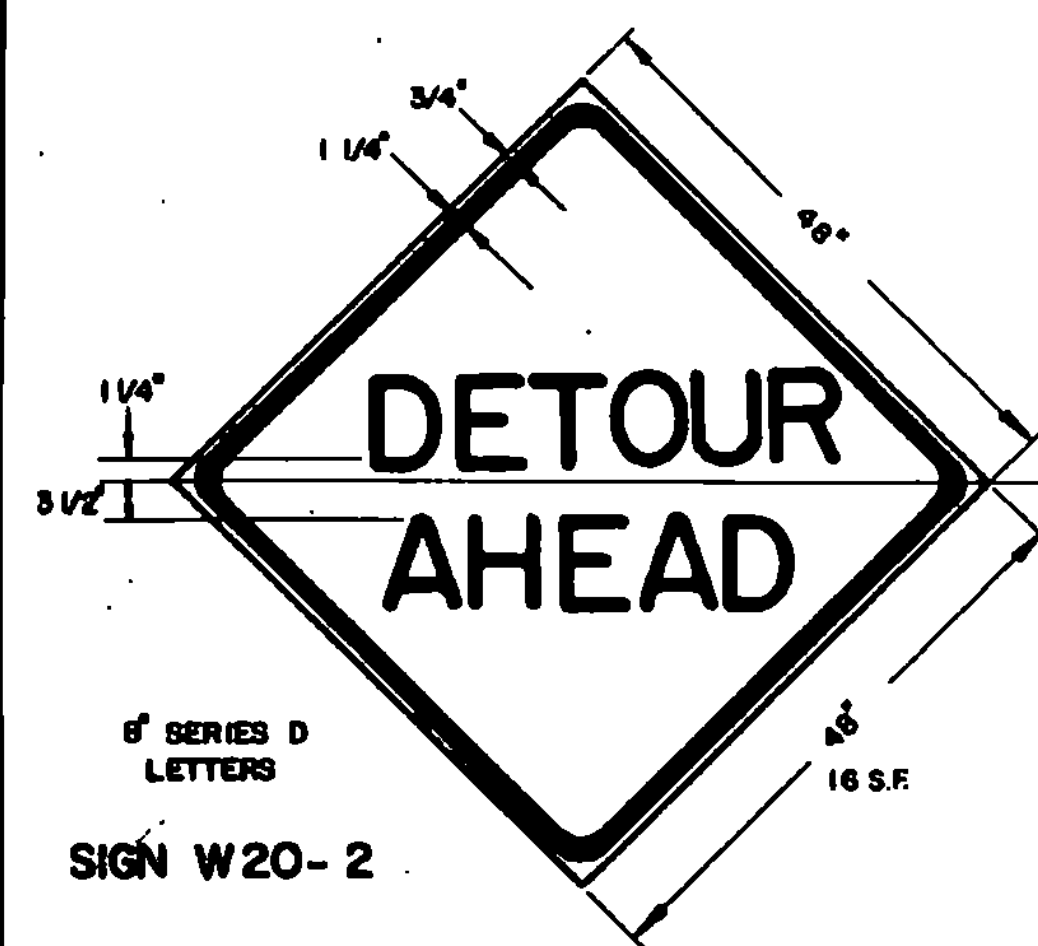
TRAFFIC SIGNS

ROAD CONSTRUCTION
APPROACH SIGNS



STANDARD

E-2



NOTES

APPLICATION OF STANDARDS

Since it is not possible to prescribe detailed standards of application for all of the situations that may conceivably arise on a construction project, reference must be made to the Manual on Uniform Traffic Control Devices for the principles, procedures and standards that will be required in connection with on-project construction signs and barricades. The signs here shown represent a sample of those that probably will be most used.

DESIGN

The designs of the signs and barricades shall conform with the details shown on this sheet and with the standards prescribed in the Manual. Deviations will not be permitted.

MATERIALS

The signs shall be of metal, wood, plywood, hardwood or any other material satisfactory to the Engineer. No material will be approved that will deteriorate by exposure to the weather during the required life of the sign.

REFLECTORIZATION AND COLORS

All signs except sign R11-2 and the sign paddle shall have black texts and borders on an encapsulated lens reflective orange background. Sign R11-2 shall have black text and border on an encapsulated lens reflective white background.

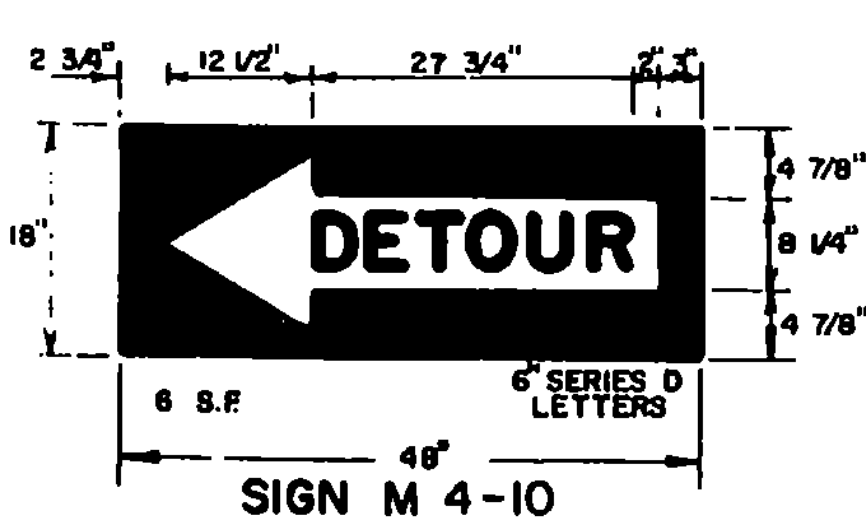
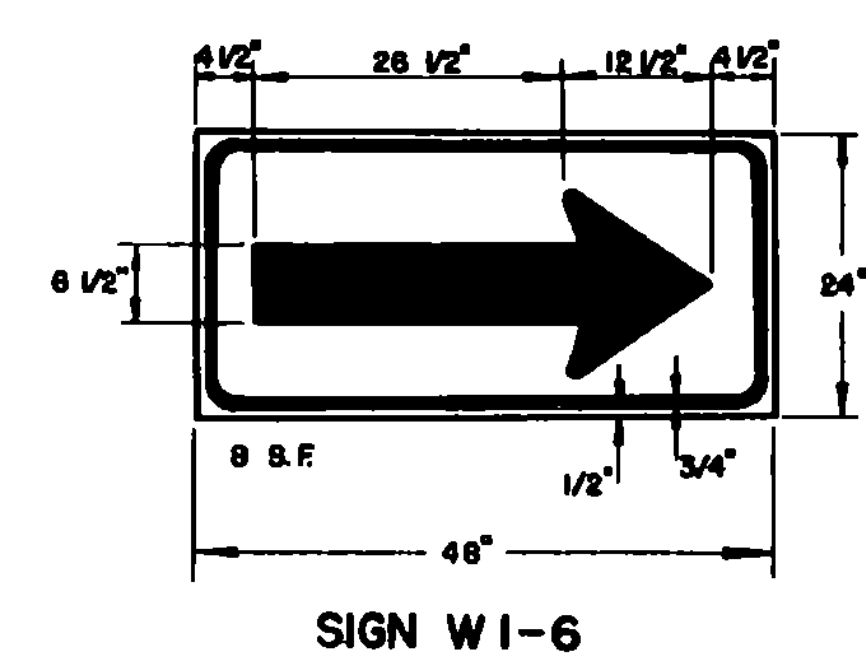
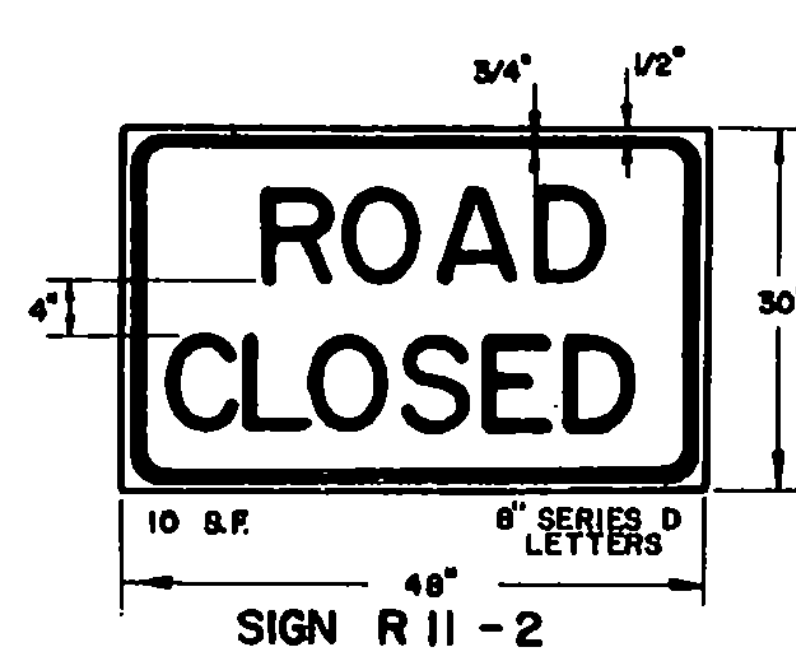
INSTALLATION

Signs and barricades shall be in place prior to the start of the construction operation to which they apply, and shall be removed promptly when the need no longer exists. Each sign shall be erected in a neat and workmanlike manner on wood or metal posts set securely in the ground, or on portable supports for temporary use, or on barricades when appropriate. As a general rule, roadside signs shall be 5 feet above road level with the nearest edge at least 6 feet outside the shoulder point. The installation of all signs and barricades shall be subject to the approval of the Engineer.

MAINTENANCE

Signs shall be kept in a clean and legible condition at all times with the reflective quality completely unimpaired. Signs, sign supports, and barricades shall be repaired, cleaned, repainted or replaced whenever necessary.

Weeds, shrubbery, construction materials, equipment, and snow shall not be allowed to obscure any sign or barricade. The maintenance of all traffic control devices shall be subject to the orders of the Engineer.



The on-project construction signs covered by this sheet are intended to be used as the situations apply within normal two-lane highway construction areas, for the protection of the public and workmen and for the guidance of traffic through or around construction operations. When messages other than those shown here are needed, the signs and their applications shall conform with the standards set forth in the Manual on Uniform Traffic Control Devices.

The cost of furnishing, erecting, maintaining and removing all construction approach signs shall be considered as subsidiary work pertaining to the project as a whole and shall be included in the contract unit price bid for various items involved in the contract.

REVISIONS AND CORRECTIONS
 DEC. 14, 1973 - BEADS ON PAINT FOR BACKGROUND MATERIAL REMOVED.
 MAY 14, 1974 - REFLECTIVE MATERIAL CHANGE.
 JUNE 7, 1977 - REFLECTIVE MATERIAL NOTE CHANGED.
 JUNE 7, 1977 - SIGNS REFERENCED TO NUMBERS IN M.U.T.C.D.
 APR. 20, 1978 - FLAGPERSON SIGN CHANGED TO SYMBOL.
 DEC. 10, 1978 - ILLUMINATION DELETED.
 FEB. 27, 1980 - SIGN W1-8 AND SIGN PADDLE ADDED. SIGN DETAILS REVISED.
 APR. 1, 1980 - SIGN PADDLE SIGN REVISED.
 FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED
 DATE Dec. 14, 1971
R. H. Canfield
 CHIEF ENGINEER
E. J. Stickney
 ASST. CHIEF ENGINEER
G. M. Lane
 HIGHWAY ENGINEER

TRAFFIC SIGNS

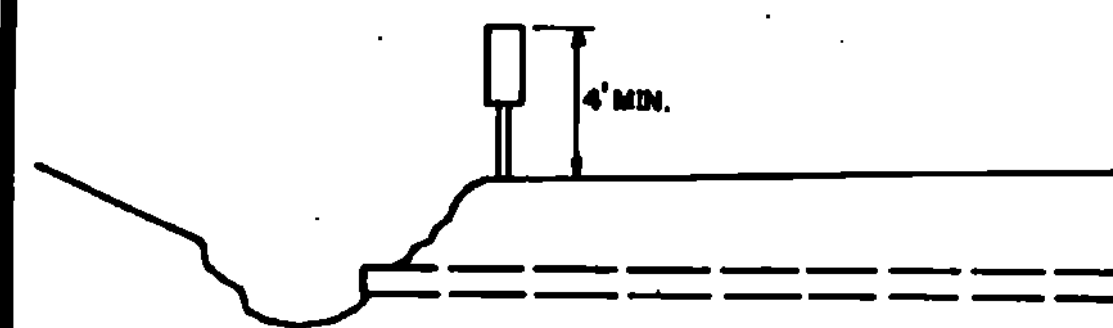
ON-PROJECT CONSTRUCTION SIGNS



STANDARD

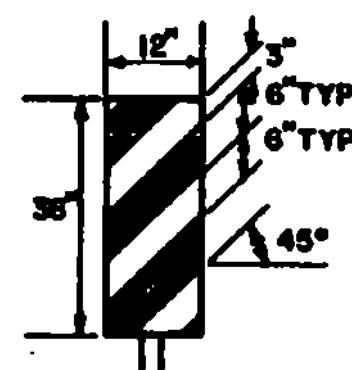
E-6

DELINEATOR AND HAZARD MARKER DETAILS FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED



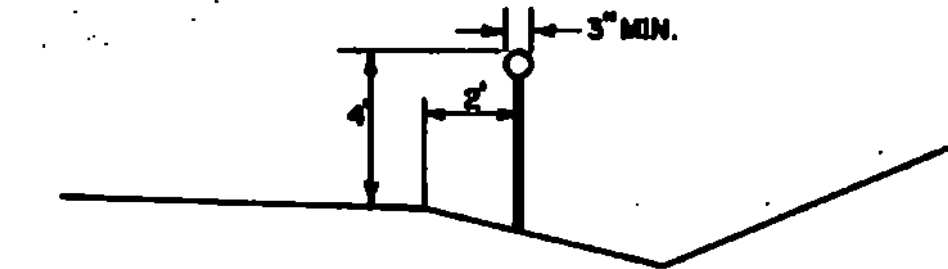
HAZARD MARKER TYPICAL

OBJECTS ADJACENT TO THE ROADWAY SHALL REQUIRE A HAZARD MARKER TO MARK THE OBSTRUCTION. 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 OR ABRUPT CHANGE IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE HAZARD MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHENEVER POSSIBLE.



VERTICAL PANEL

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

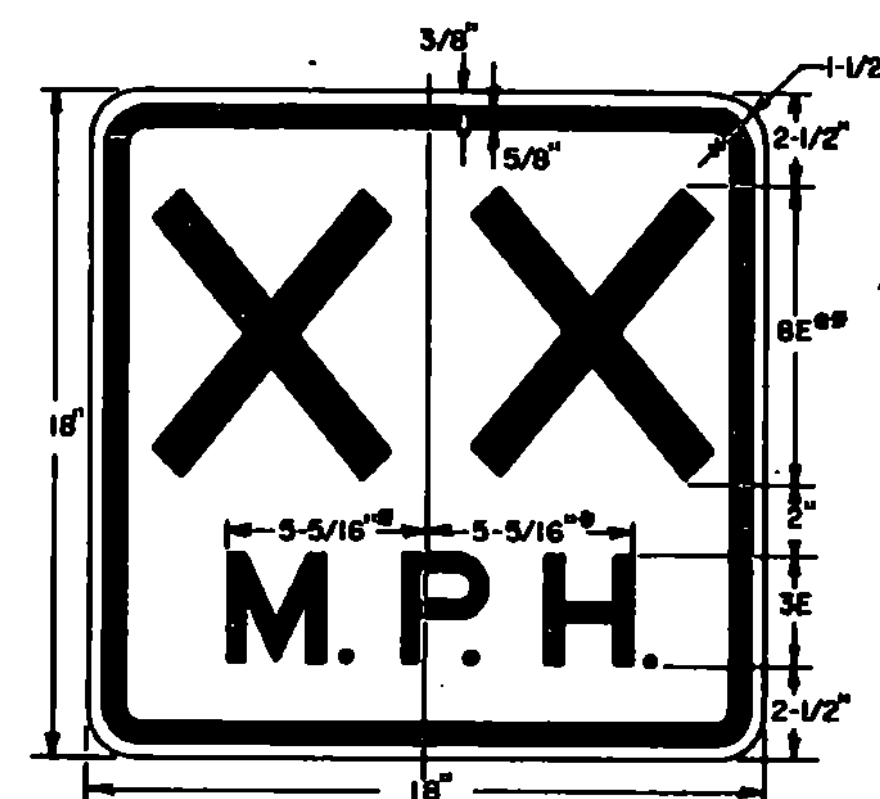


SYMBOL

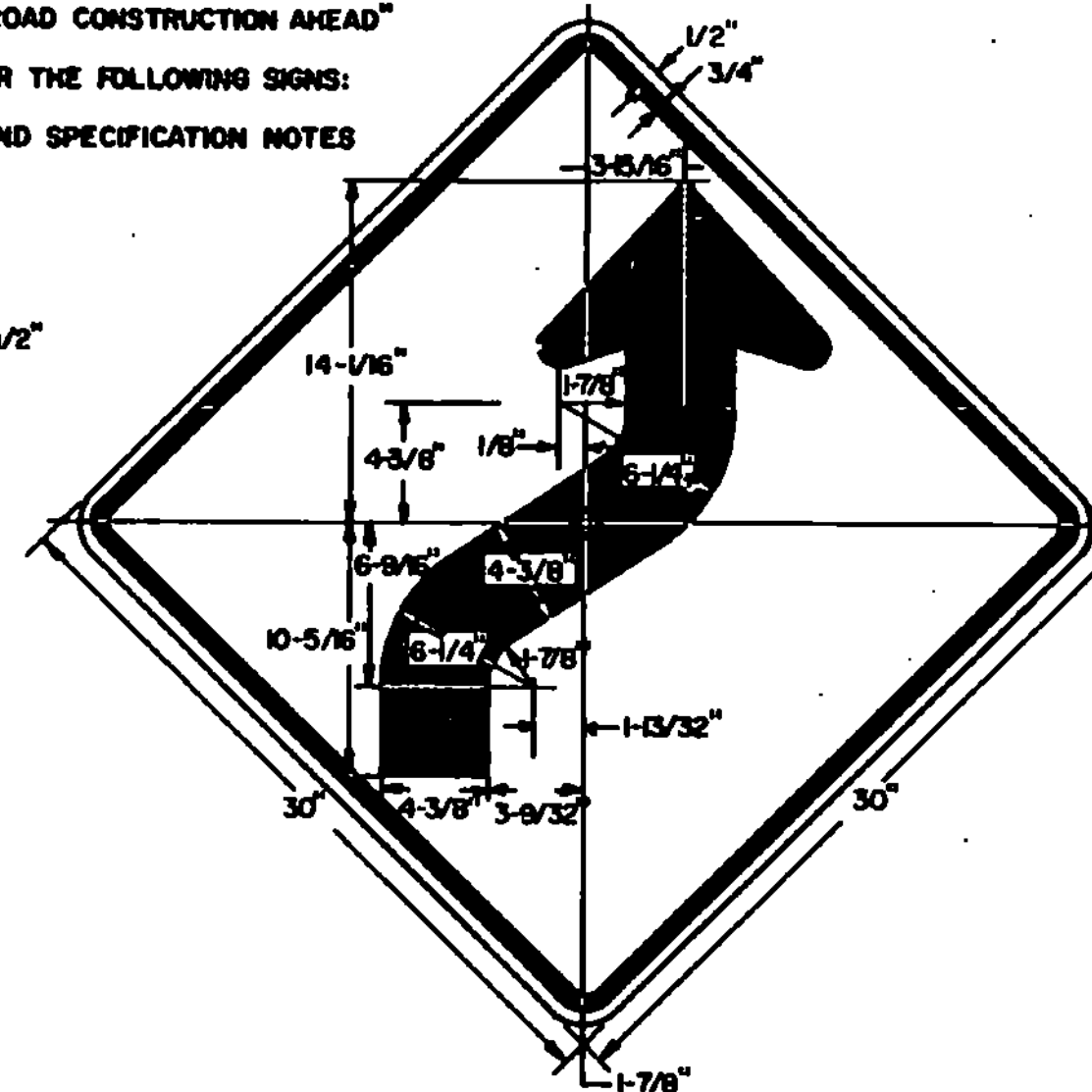
DELINEATOR TYPICAL

DELINEATORS SHALL BE OF A REFLECTORIZED WHITE COLOR. THEY SHALL HAVE A MINIMUM OF 7 SQUARE INCHES. THEY MAY BE ROUND, SQUARE, OR OBLONG. THEY SHALL BE OF THE FOLLOWING:
1- REFLECTORIZED TAPE WITH METAL BACKING.
2- REFLECTORIZED TAPE APPLIED DIRECTLY TO POSTS.
3- REFLECTORIZED PAINT APPLIED DIRECTLY TO POSTS WHEN PAINT OR TAPE IS APPLIED DIRECTLY TO POSTS, A SURFACE OF 3' MINIMUM WIDTH FACING TRAFFIC IS REQUIRED.

SEE STANDARD SHEET E-2 FOR SIGN DETAILS FOR "ROAD CONSTRUCTION AHEAD" AND "END CONSTRUCTION" SIGNS.
SEE STANDARD SHEET E-6 FOR SIGN DETAILS FOR THE FOLLOWING SIGNS:
"DETOUR AHEAD", "ROAD CLOSED", "DETOUR" ARROW.
SEE STANDARD SHEET E-6 FOR SIGN MATERIAL AND SPECIFICATION NOTES FOR ALL SIGNS DETAILED ON THIS SHEET.



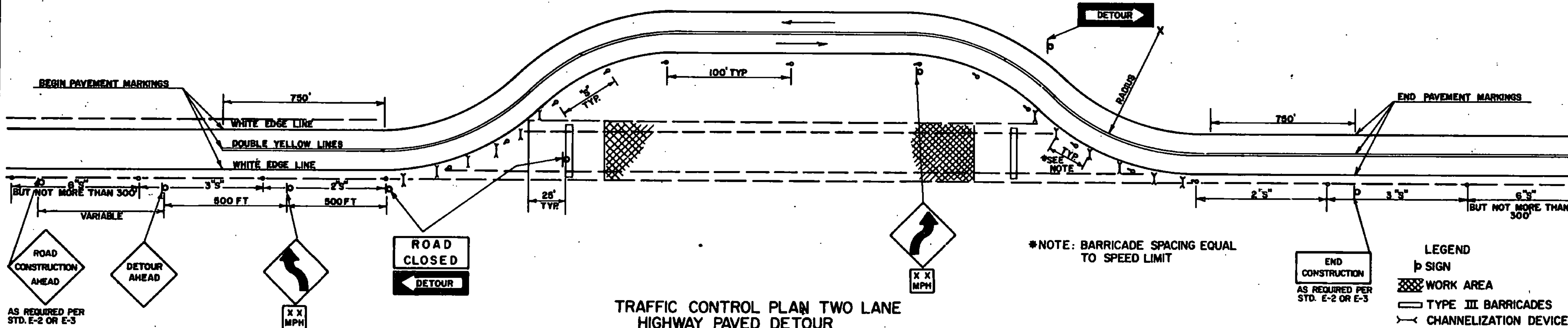
*INCREASE SPACING 100%
**OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.



NOTES

1. SIGNS & DELINEATION SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
2. CHANNELIZING DEVICES SHALL CONSIST OF TYPE II BARRICADES WITH STEADY BURN LIGHTS EXCEPT ON THE FIRST AND LAST BARRICADES WHICH SHALL HAVE A FLASHING LIGHT.
3. FLASHING WARNING LIGHTS MAY BE USED TO CALL ATTENTION TO THE EARLY WARNING SIGNS.
4. CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
5. ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
6. UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS ON EXISTING PAVEMENT.

DESIGN SPEED MPH	REQUIRED RADIUS FT	SPACING - "S" FT
25	150	30
30	250	40
40	450	60
50	750	75



TRAFFIC CONTROL PLAN TWO LANE
HIGHWAY PAVED DETOUR

*NOTE: BARRICADE SPACING EQUAL
TO SPEED LIMIT

LEGEND

- SIGN
- ▨ WORK AREA
- TYPE III BARRICADES
- CHANNELIZATION DEVICES
- DELINEATORS

BARRICADES

APPLICATION NOTES

TYPE I BARRICADES ARE TO BE USED ON CONVENTIONAL ROADS OR URBAN STREET AND ARTERIALS TO MARK A SPECIFIC HAZARD TO CHANNELIZE TRAFFIC.

TYPE II BARRICADES ARE TO BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS THE TYPE I BARRICADES.

TYPE III (SEE STANDARD E-7A) SHALL ONLY BE USED WHEN A ROAD SECTION IS CLOSED TO TRAFFIC TO BE ERECTED AT THE POINT OF CLOSURE.

MATERIALS

THE BARRICADES SHOWN ON THIS SHEET NORMALLY WILL BE OF LIGHTWEIGHT MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY.

1. WOODEN BARRICADES (TYPES 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 MILES PER HOUR ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.

B. MAY BE USED IF OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.

2. TYPE III WOODEN BARRICADES SHALL NOT BE USED WITHIN THE CLEAR ZONE OF ANY HIGHWAY REGARDLESS OF THE TRAFFIC OPERATING SPEED.

DESIGN

THE DESIGN OF THE BARRICADES SHALL CONFORM WITH THE DETAILS SHOWN ON THIS SHEET AND THE MARKINGS ON THE BARRICADES SHALL BE ALTERNATE ORANGE AND WHITE STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION TRAFFIC IS TO PASS).

COLORS

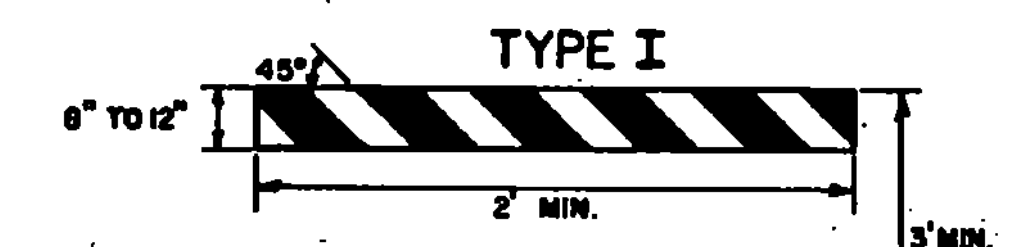
THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING REFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION. THE BARRICADE COMPONENTS SHALL BE WHITE EXCEPT THAT UNPAINTED METAL OR ALUMINUM MAY BE USED.

REFLECTORIZATION

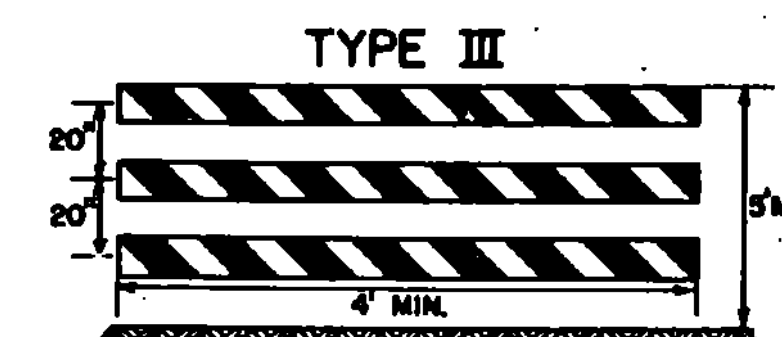
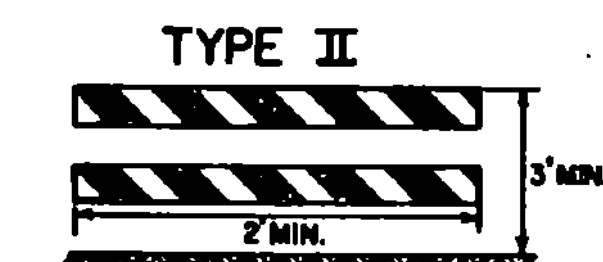
THE BARRICADES SHALL BE REFLECTORIZED WITH REFLECTIVE SHEETING.

LOCATION

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, OR AS OTHERWISE NOTED.



STRIPPING IS SHOWN WITH
TRAFFIC PASSING TO THE
RIGHT.



	BARRICADE	CHARACTERISTICS	
		I	II
	WIDTH OF RAIL	6" MIN. 12" MAX.	6" MIN. 12" MAX.
	LENGTH OF RAIL	2' MIN.	2' MIN.
	WIDTH OF STRIPS*	6"	6"
	HEIGHT	3' MIN.	3' MIN.
	TYPE OF FRAME	DEMOUNTABLE OR A FRAME	LIGHT A FRAME NO STRAY BRACE
	FLEXIBILITY	ESSENTIALLY MOVEABLE	PORTABLE
	ANGLE OF STRIPE	45°	45°
	COLOR OF STRIPS	ORANGE AND WHITE	ORANGE AND WHITE

*FOR RAILS LESS THAN 3 FEET LONG, 4" WIDE STRIPS SHALL BE USED.

MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION 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.

LIGHTING

FOR NIGHTTIME USE ADD FLASHING WARNING LIGHTS WHEN BARRICADES ARE USED SINGLY AND STEADY BURN LIGHTS WHEN BARRICADES ARE USED IN A SERIES FOR CHANNELIZATION. THE LIGHTING DEVICES SHALL CONFORM TO THOSE SPECIFIED IN THE MUTCD.

REVISIONS AND CORRECTIONS

FEB. 12, 1982 MATERIALS NOTE CLARIFIED, SIGN ADDITIONS.
FEB. 2, 1983 NOTE # 6 RE: UNPAVED DETOURS ADDED.

FEB. 3, 1986 - UPDATED TO 1986
SPECIFICATIONS

APPROVED:

SEPT. 22, 1981
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

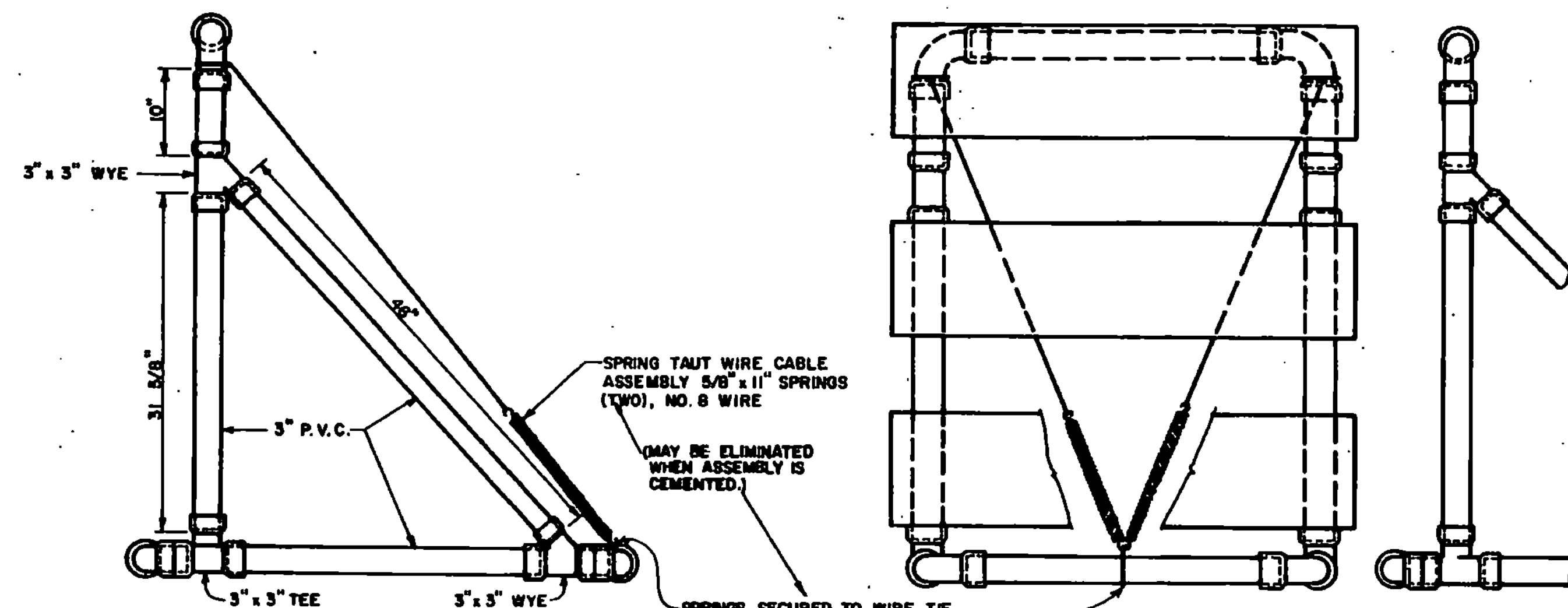
CHIEF OF DESIGN

TRANSPORTATION DESIGN ENGINEER

DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS



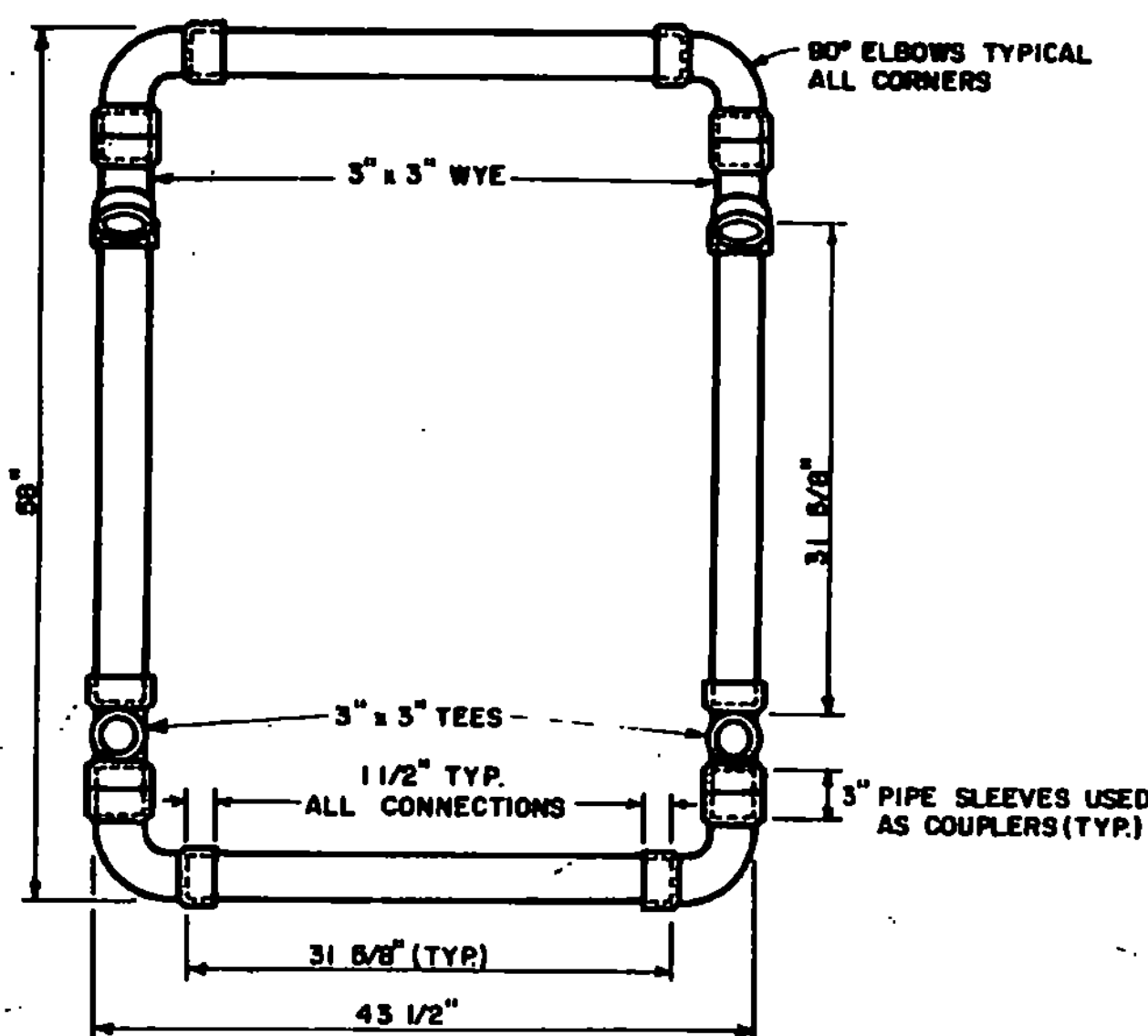
STANDARD
E-7



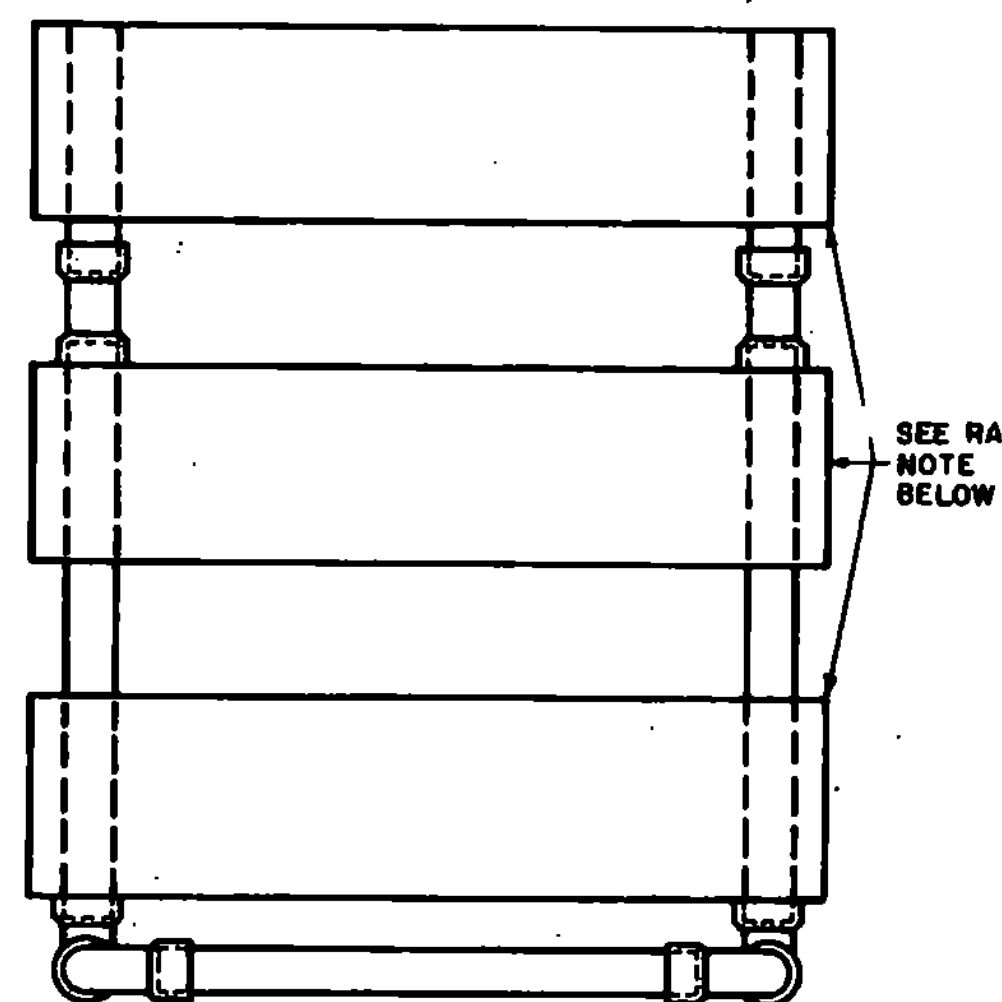
SIDE VIEW

BARRICADES SHALL BE STABILIZED WITH SAND BAGS OF MINIMUM WEIGHT WHICH WILL NOT CONSTITUTE A HAZARD WHEN BARRICADE IS HIT. THEY SHALL BE PLACED ONLY ON THE BASE FRAME OF THE BARRICADE. STABILIZERS SHALL BE SO PLACED AS NOT TO BE A HAZARD TO VEHICLES PASSING ON EITHER SIDE.

IF BARRICADE REPLACEMENT COSTS CAN BE CONSIDERED NEGLIGIBLE, GLUED JOINTS MAY PROVIDE ADDITIONAL STABILITY TO THE INSTALLATION.



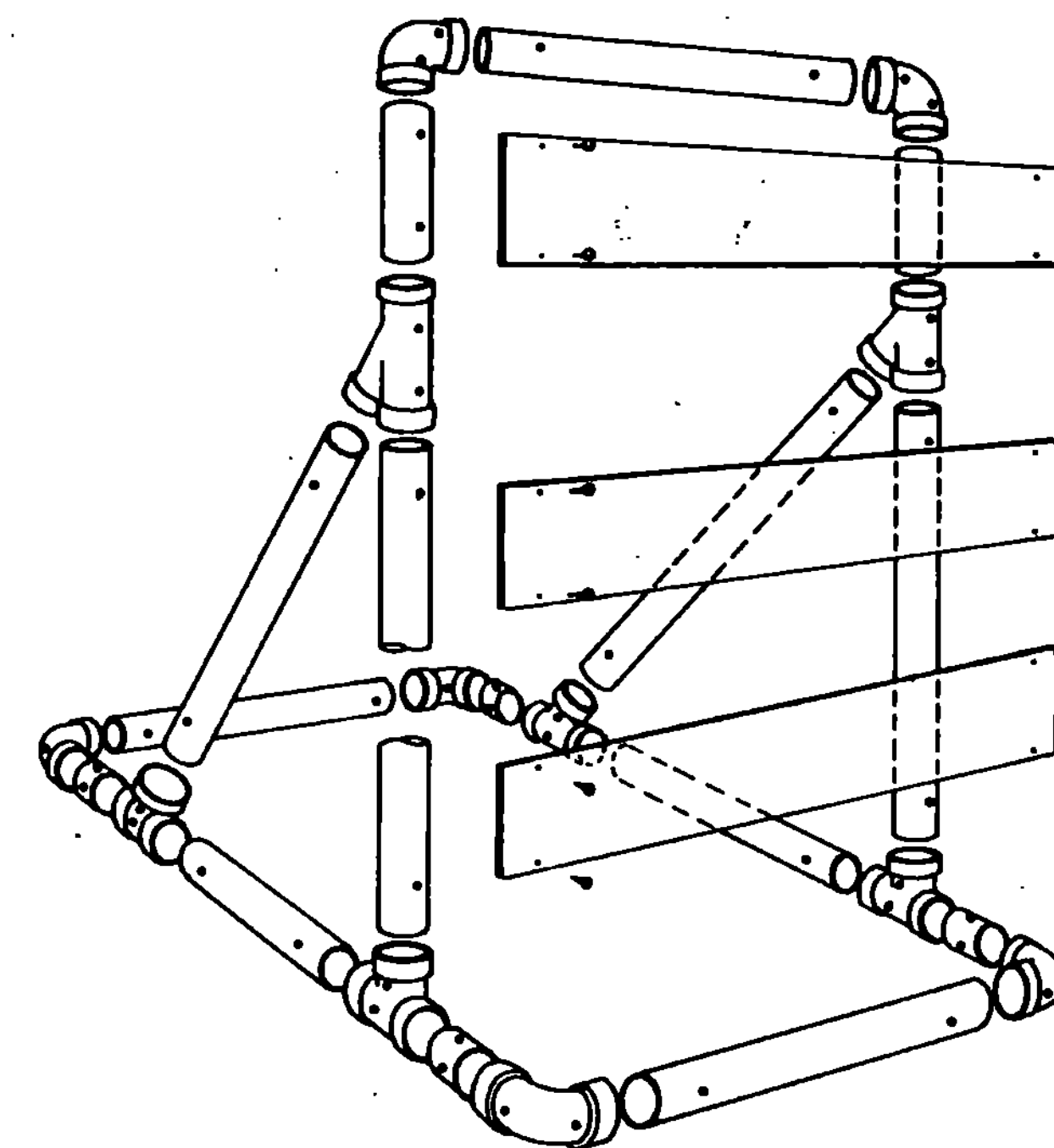
TOP VIEW OF BASE



SEE STANDARD E-7 FOR RAIL DETAILS.

RAILS ATTACHED WITH 1\"/>

FRONT VIEW



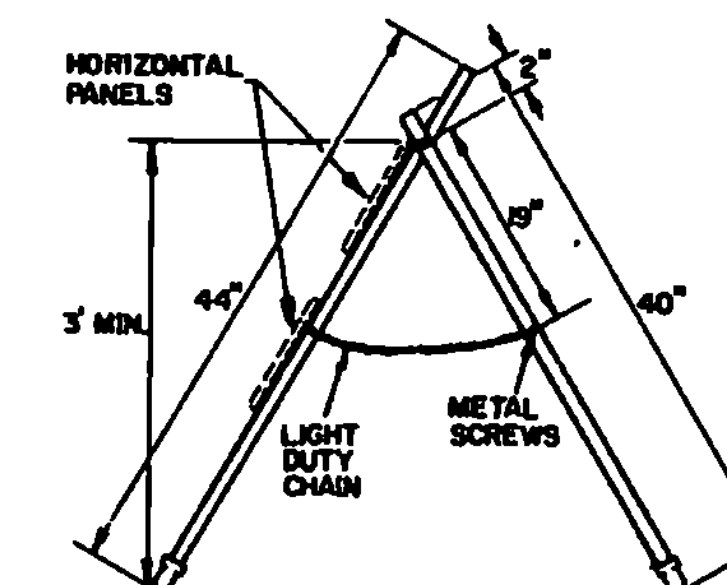
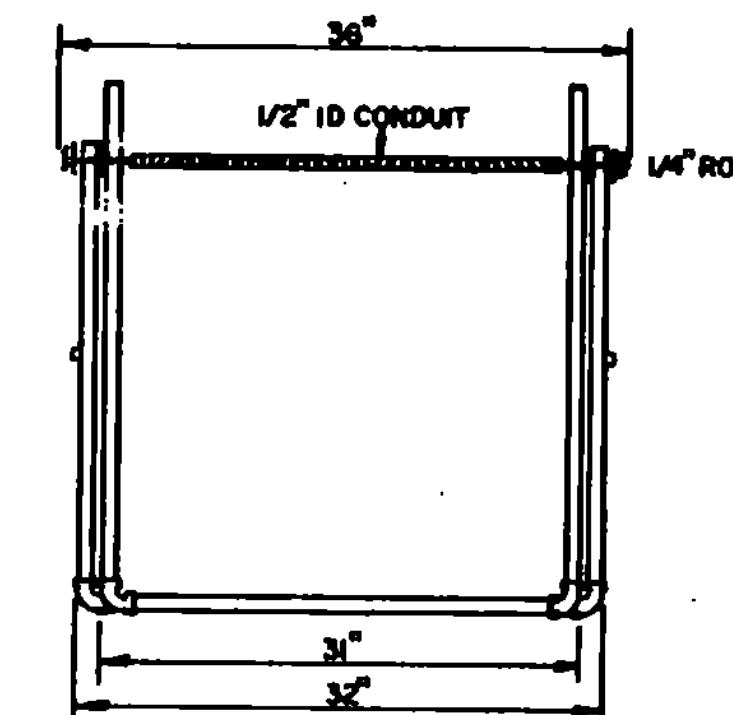
BARRICADE ASSEMBLY

MATERIALS LIST FOR ONE BARRICADE

3" Diameter Pipe	30 LF
3" 1/4 Bend Elbow	6 EA
3" Tees	2 EA
3" Wyes	4 EA
8" x 48" x 0.25 Barricade Panels	2 EA
5/8" x 11" No. 8 Spring	2 EA
1" No. 14 Pan Head Metal Screws	12 EA
No. 14 Black Annealed Tie Wire	15 LF

WARNING LIGHTS

WARNING LIGHTS, IF REQUIRED BY THE PLANS OR RESIDENT ENGINEER, SHALL BE AFFIXED TO THE TOP OF THESE BREAKAWAY BARRICADES WITH A MINIMUM MOUNTING HEIGHT OF 36 INCHES TO THE BOTTOM OF THE LENS. A FLASHING WARNING LIGHT SHOULD BE PLACED ON BARRICADES USED SINGLY AND STEADY BURN WARNING LIGHTS SHOULD BE PLACED ON BARRICADES USED IN A SERIES FOR TRAFFIC CHANNELIZATION. THE WARNING LIGHTS SHALL CONFORM TO THE REQUIREMENTS FOUND IN THE M.U.T.C.D. WHEN THE INTEGRAL WARNING LIGHT UNIT IS USED, THE BATTERY PACK SHALL CONTAIN A LIGHT WEIGHT DRY CELL BATTERY AND THE UNIT SHALL BE RESTRAINED WITH A TETHER CABLE OR WIRE (12' LENGTH) SECURELY FASTENED TO THE BARRICADES SO AS TO AVOID HAVING THE UNIT BECOME A DANGEROUS FLYING OBJECT IF THE BARRICADE IS HIT.



TYPE I & II BARRICADE DETAILS

MATERIALS

The pipe, wyes, tees and elbows used to construct Barricades shall conform to the requirements of ASTM designation D 2241 for P.V.C. 1120 or 1220 SCH-21, pressure rating 200 p.s.i. The Wyes, tees and elbows shall conform to the requirements of ASTM Designation D 2466, Type II, Grade 1. All joints shall be slip-fit and may be lightly cemented.

The 8" x 48" barricade rails shall be fabricated from 0.025" anodized aluminum and shall have reflectorized alternating, orange and white stripes (sloping downward at an angle of 45 degrees in the direction traffic is to pass).

COLORS

The barricades shown on the sheet shall have reflectorized orange and white stripes.

The orange shall conform with the standard color adopted by the American Association of State Highway And Transportation Officials and approved by the U.S. Department of Transportation, Federal Highway Administration.

LOCATION

The barricades shown on this sheet will be located by the Engineer in the field or as shown on the plans. The locations of the barricades shall follow the procedures set forth in the Manual on Uniform Traffic Control Devices.

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. Damages, defaced, or dirty barricades shall be repaired, cleaned or replaced as ordered by the Engineer.

The P.V.C. Pipe and fittings shall be white in color. If the fittings are not available, other colors may be substituted.

At least two (2) holes shall be drilled (3/16" to 1/4") in each section of pipe and fittings if the assembly is not cemented.

MATERIALS FOR TYPE I & II BARRICADES

- 20'-1" PVC
- 4'-1" PVC 90° ELBOWS
- 30'-1/2" ID THINWALL CONDUIT
- 36'-1/4" STEEL ROD
- 4'-1" WASHERS
- 24'-1" LIGHT DUTY CHAIN
- 4'-METAL SCREWS
- 2'-3/4" COTTER PINS

TYPE I BARRICADES SHALL CONSIST OF ONE HORIZONTAL PANEL.

TYPE II BARRICADES SHALL CONSIST OF AN ADDITIONAL HORIZONTAL PANEL MOUNTED BELOW THE OTHER.

SEE STD E-7 FOR USE REQUIREMENTS.

REVISIONS & CORRECTIONS

JUN. 11, 1977 - REVISED ACCORDING TO FHWA REQUIREMENTS.

JUNE 8, 1977 - MATERIALS LIST ADDED.

APR. 8, 1982 - CEMENTING NOTE AND BARRICADES TYPE I & II ADDED.

JUNE 13, 1984 - RAILS CHANGED FROM 9" TO 8".

JAN. 3, 1989 - SAND AND WARNING LIGHT NOTE ADDED.

NOV. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED

DEC 30, 1976

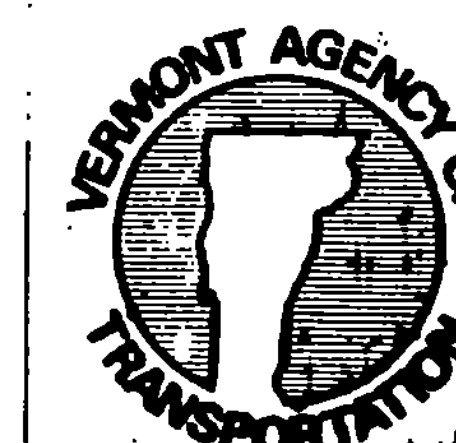
C. H. Highway
CHIEF ENGINEER

R. O. Munn
ASST. CHIEF ENGINEER

D. C. Jones
HIGHWAY ENGINEER

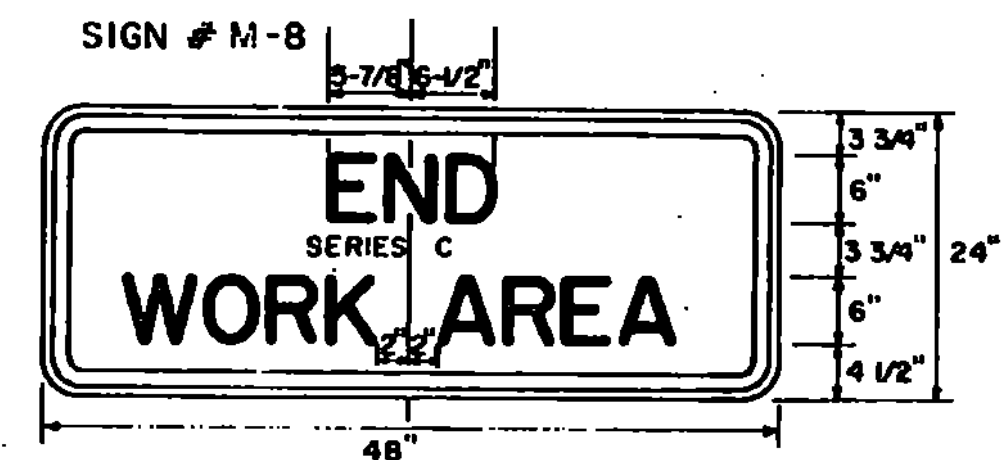
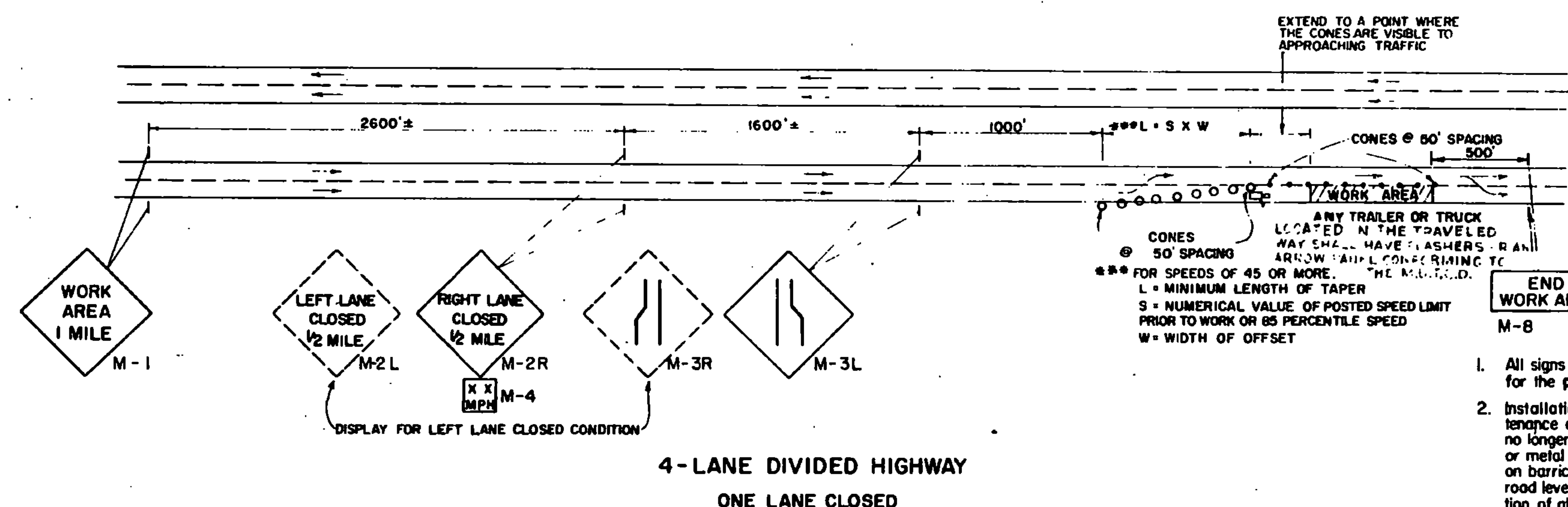
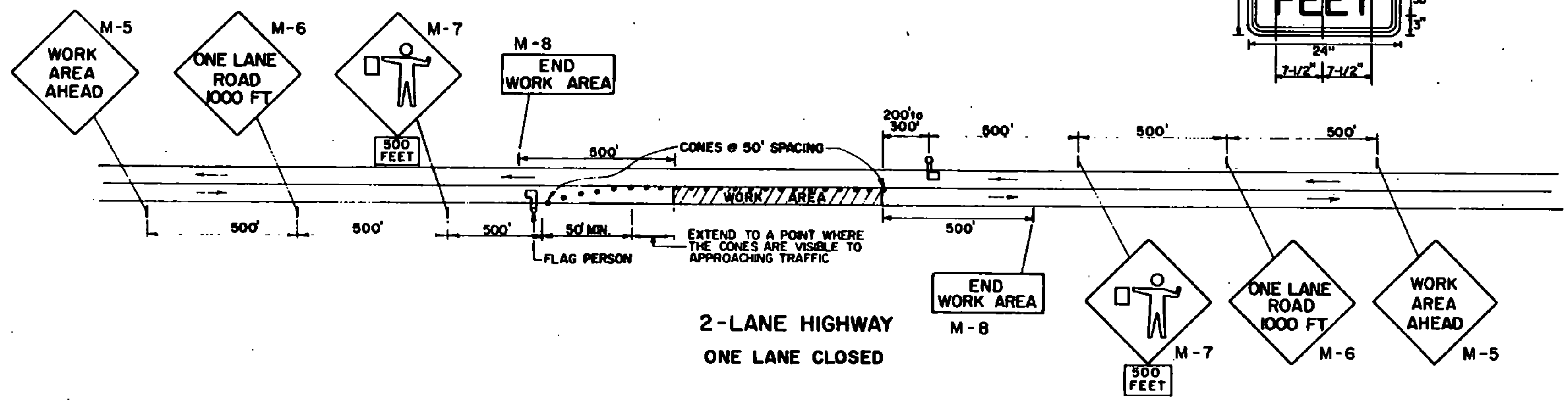
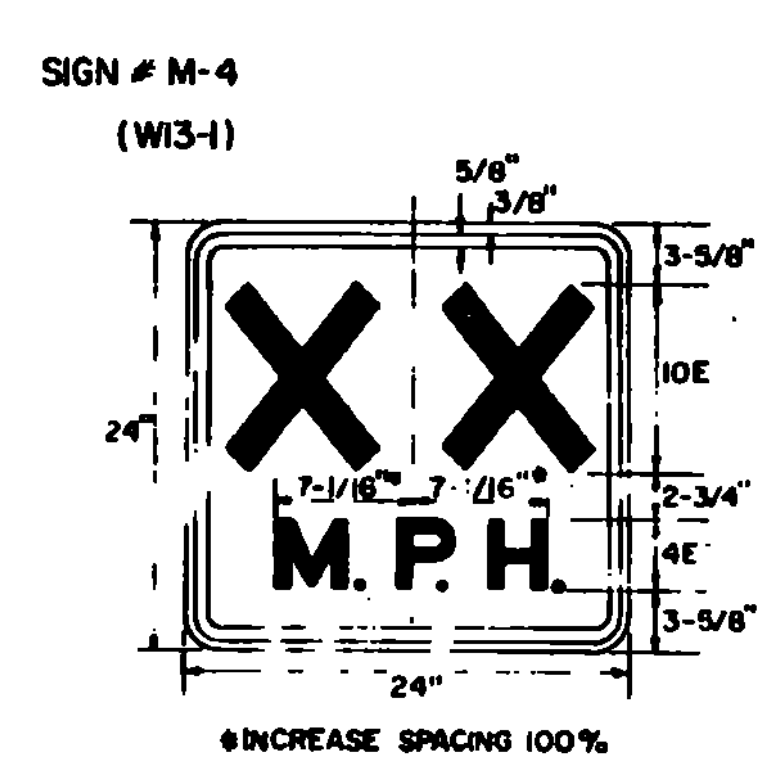
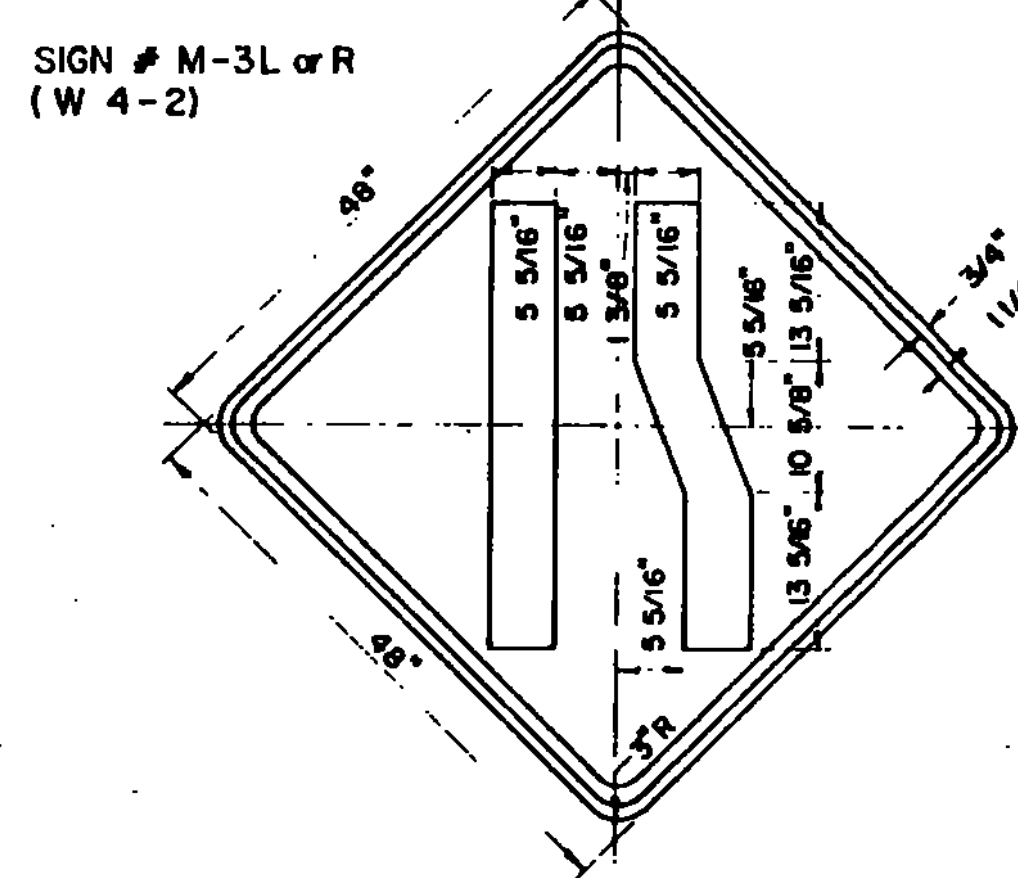
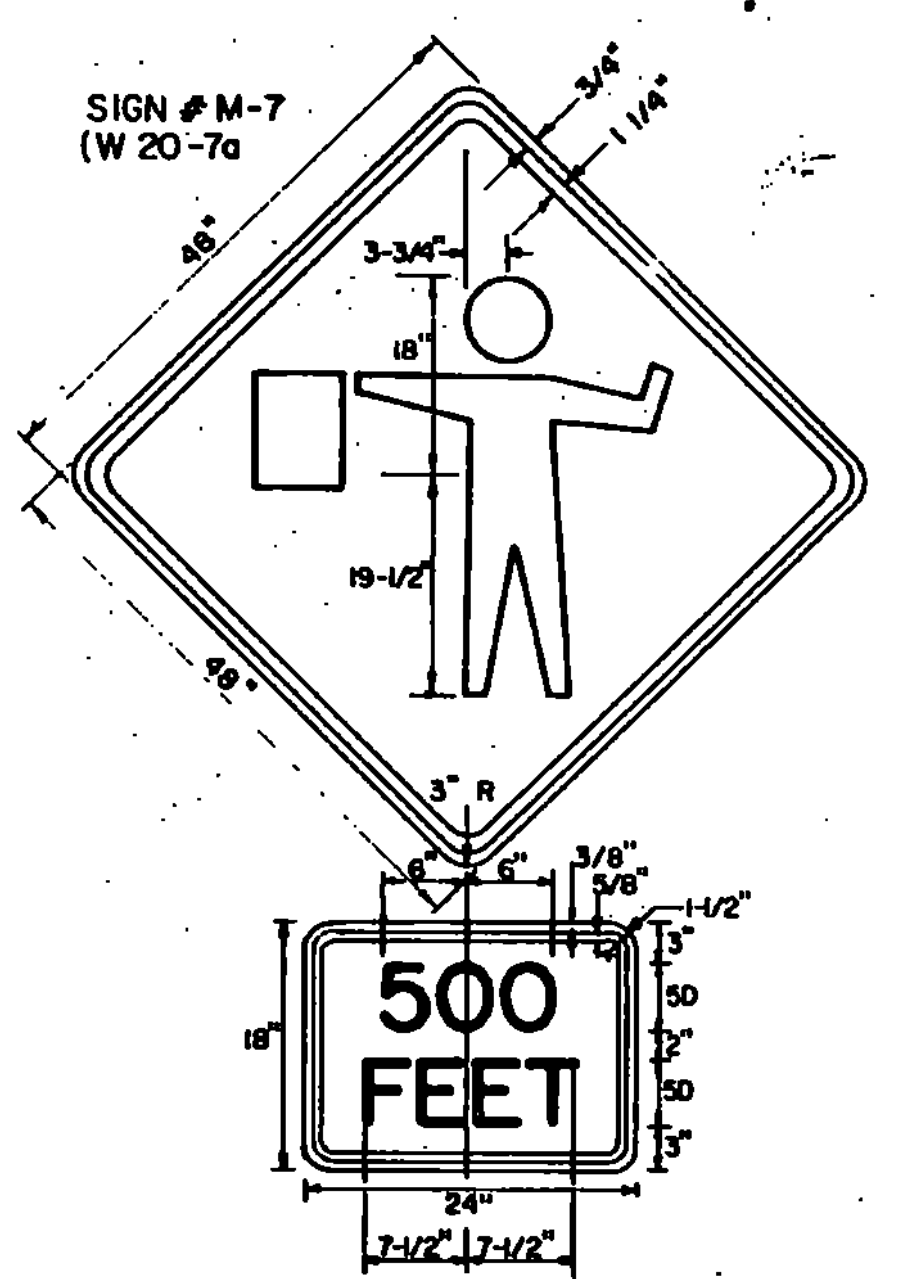
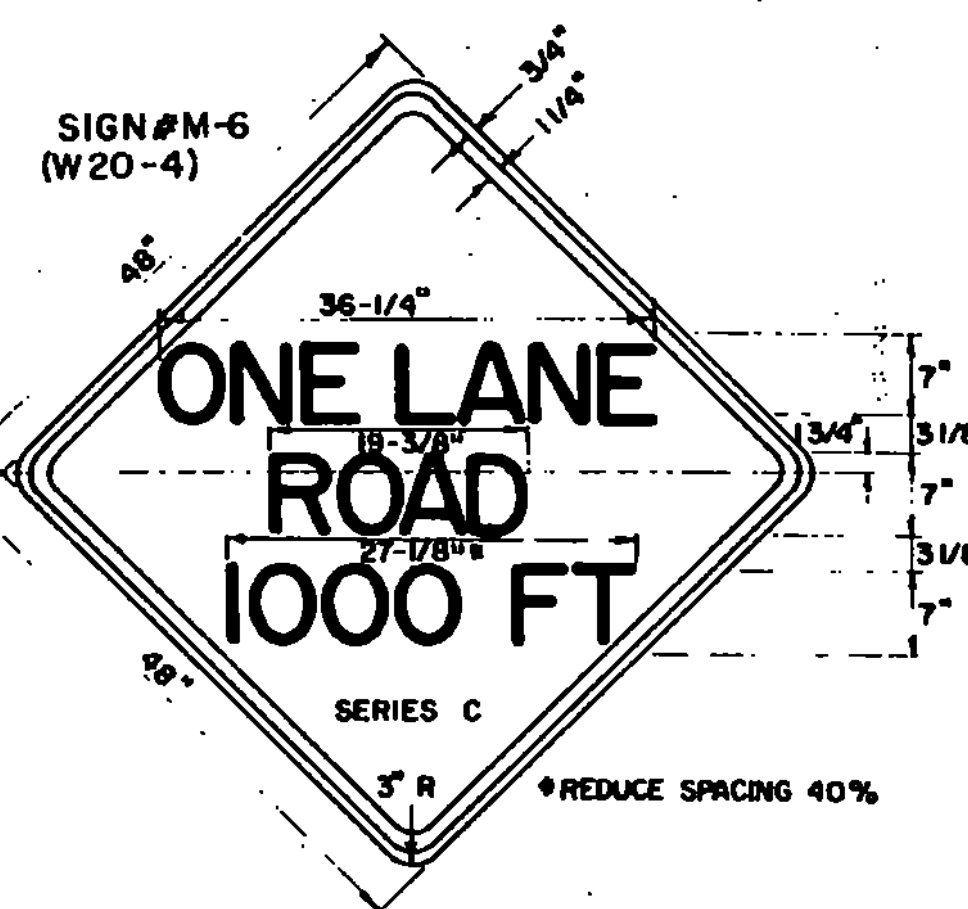
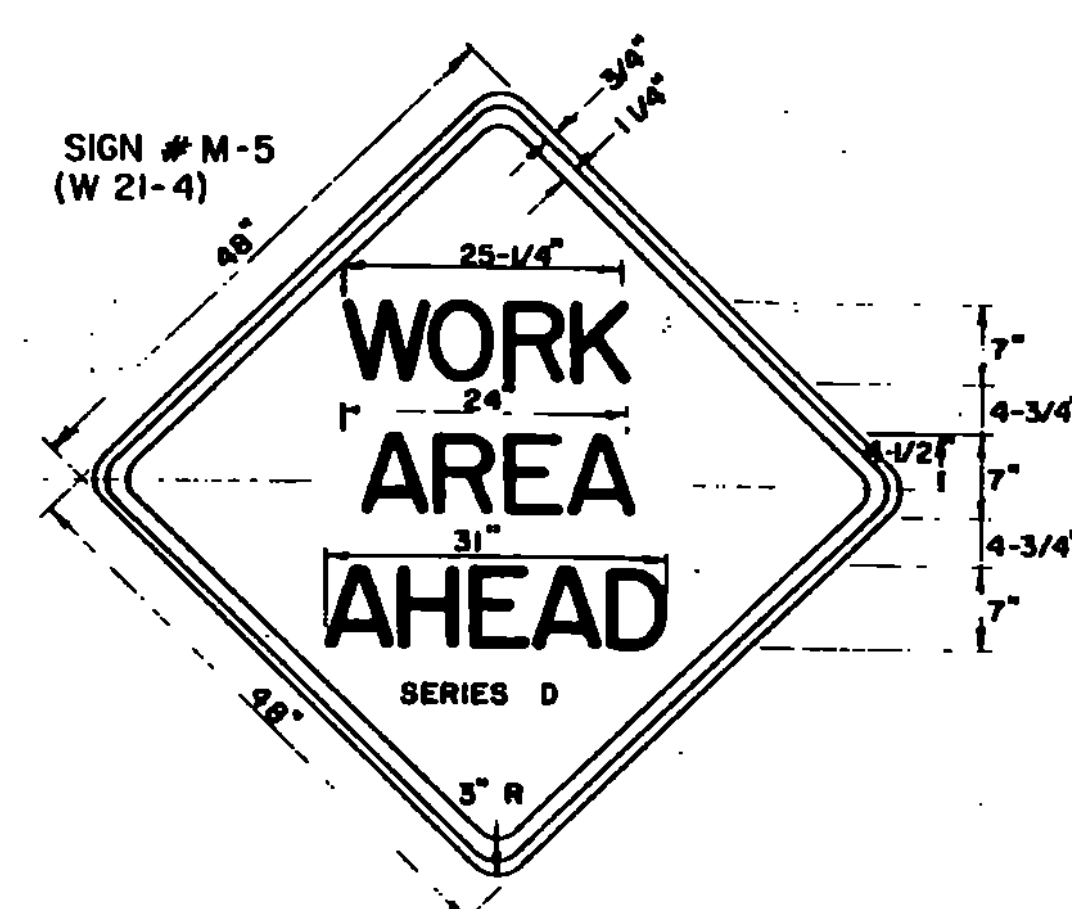
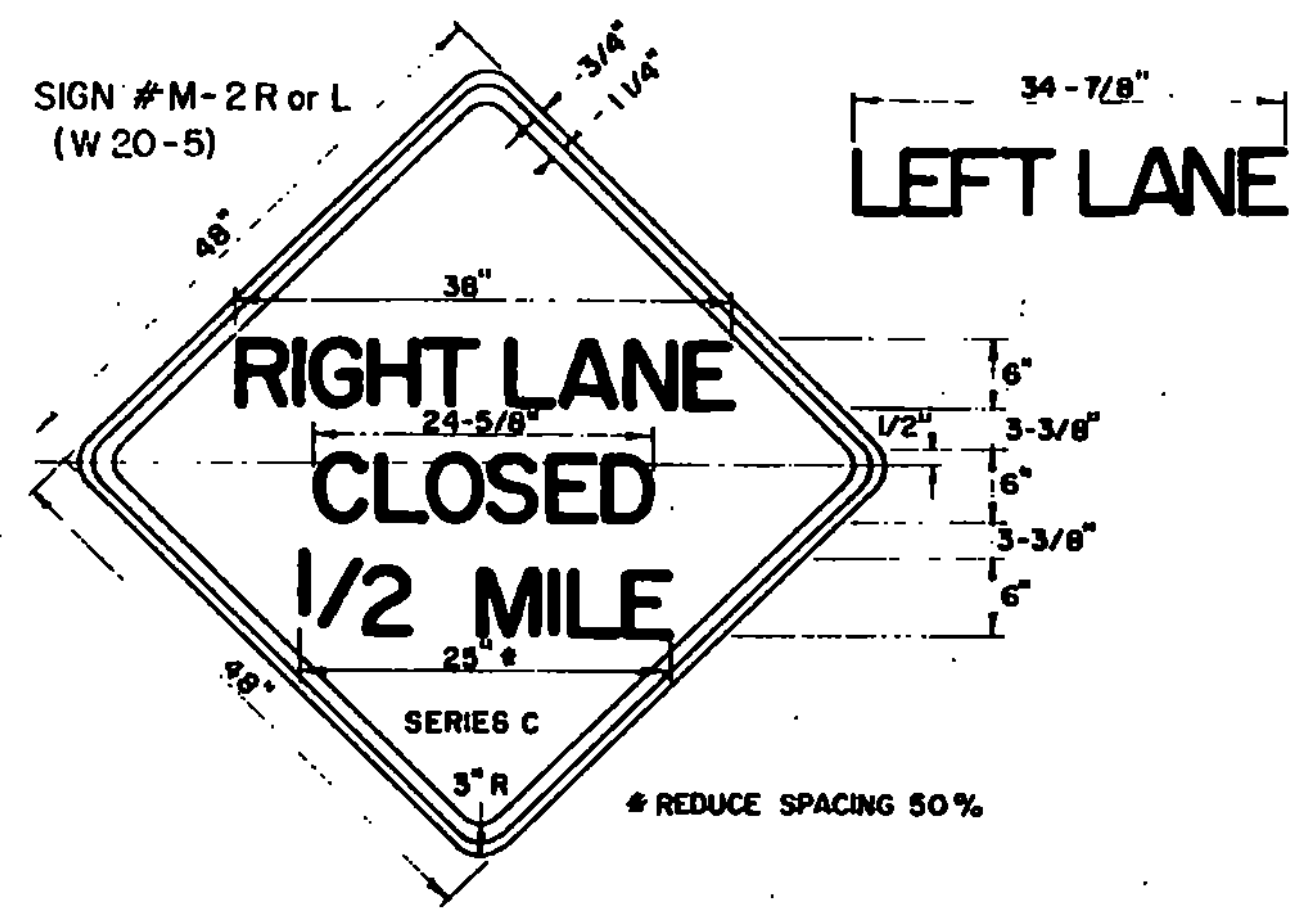
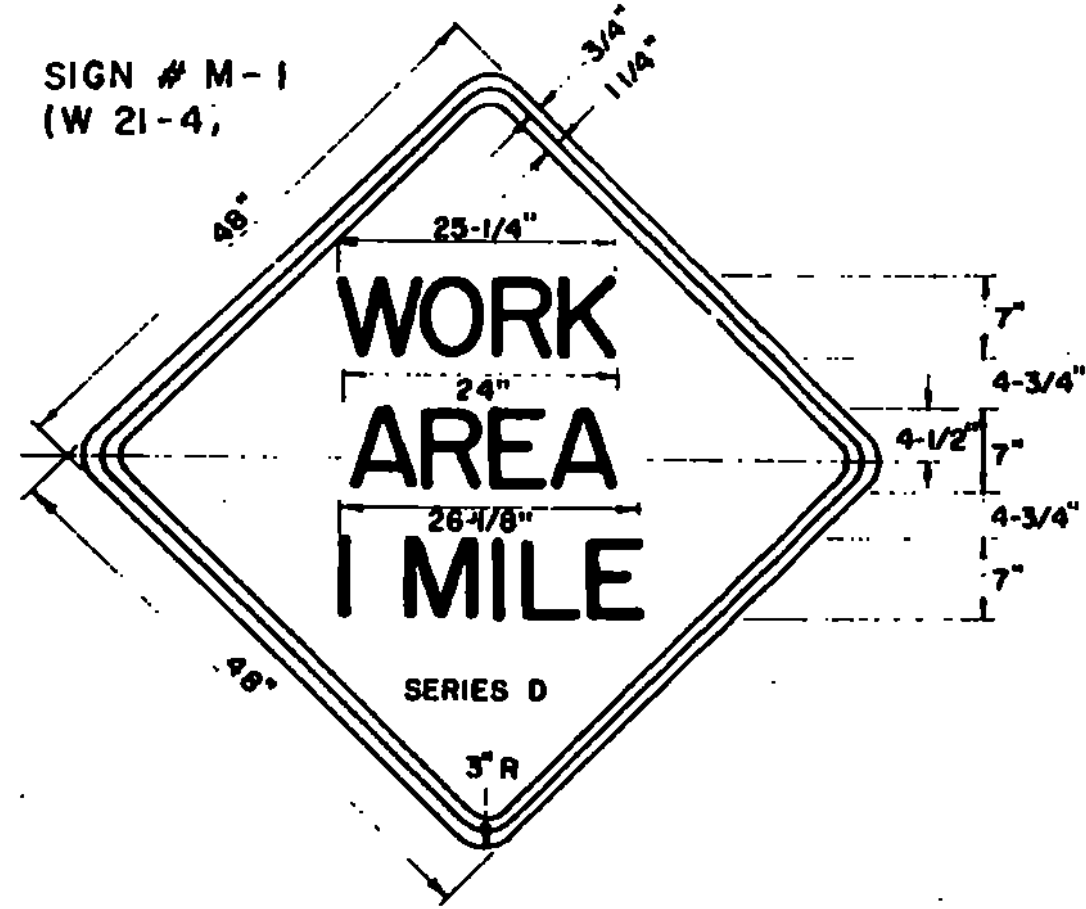
TRAFFIC SIGNS

BREAKAWAY BARRICADE DETAILS



STANDARD

E-7a



NOTES

- All signs shall be covered or removed at the end of the working day unless required for the protection and safety of the traveling public.
- Installation: Signs and barricades shall be in place prior to the start of the maintenance operation to which they apply and shall be removed promptly when the need no longer exists. Each sign shall be erected in a neat and workmanlike manner on wood or metal posts set securely in the ground, or on portable supports for temporary use, or on barricades when appropriate. As a general rule, roadside signs shall be 5 feet above road level with the nearest edge at least 6 feet outside the shoulder point. The installation of all signs and barricades shall be subject to the approval of the Engineer.
- Numbers in parenthesis indicate M.U.T.C.D. sign designations.
- "ROAD WORK" or "BRIDGE WORK" may be substituted as the appropriate legend for signs # M-1 or M-5.

Reflectorization

All reflectorized material shall consist of encapsulated lens reflective sheeting. The text and borders may be screened, lettering film, or hand painted. Cones used for traffic control at night shall have a minimum 6" wide reflectorized material. Colors: The warning signs shown on this sheet shall have black text, border, and symbols on a reflectorized orange background. The orange 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.

Text Design

Letters, digits, spacing, and text dimensions shall conform with the standard alphabets and design prescribed in the manual on Uniform Traffic Control Devices.

Specifications

Warning signs shall meet the standard state specifications for traffic signs.

Sign Base Material

The sign base material used for the warning signs on this sheet may be of any of the following, with minimum thickness as noted:

Flat sheet aluminum	0.125	Inches
High density overlaid plywood	3/4	Inches
Galvanized sheet steel	12	Gage

5. ON TOWN, CITY AND INCORPORATED VILLAGE HIGHWAY SYSTEMS THE MINIMUM NUMBER OF SIGNS IS AS FOLLOWS:

MINIMUM NUMBER OF SIGNS REQUIRED ARE M-6 AND M-7. MINIMUM SIZE OF THE SIGNS SHALL BE 36" x 36".

THIS SIGN SIZE REDUCTION IS FOR DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION.

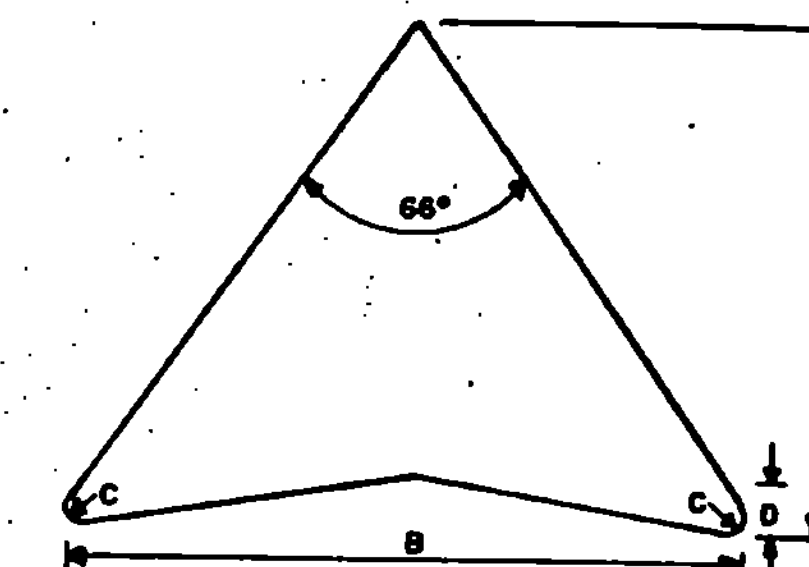
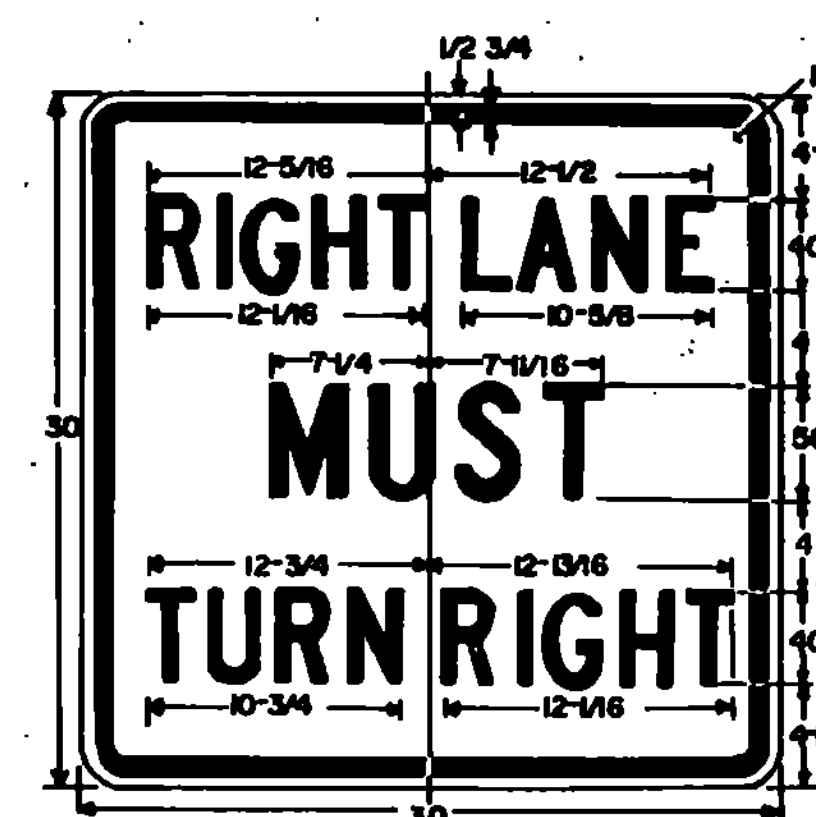
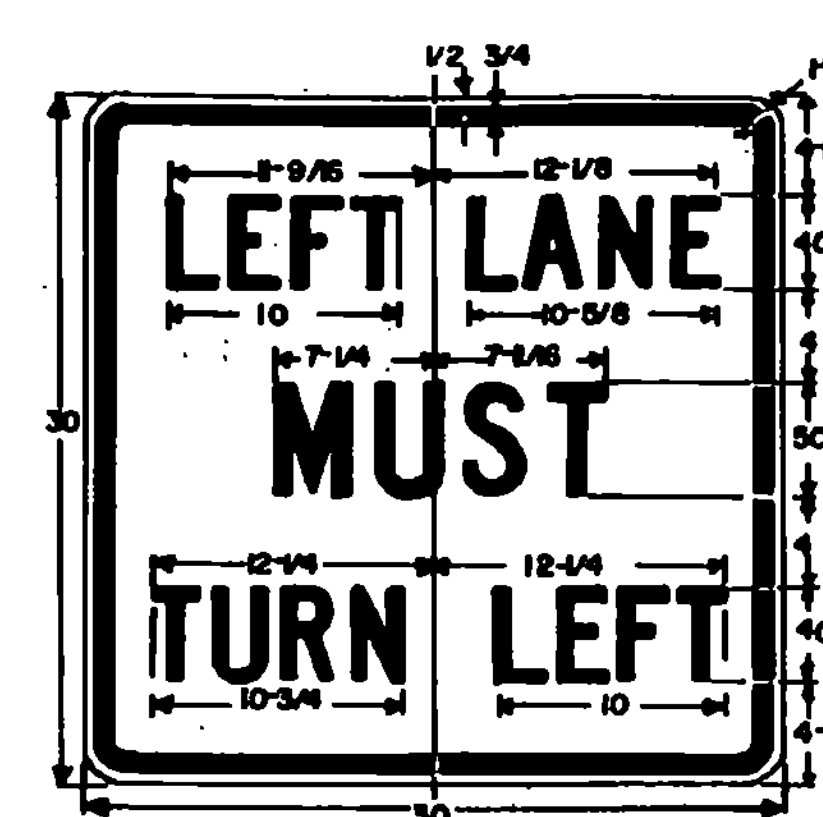
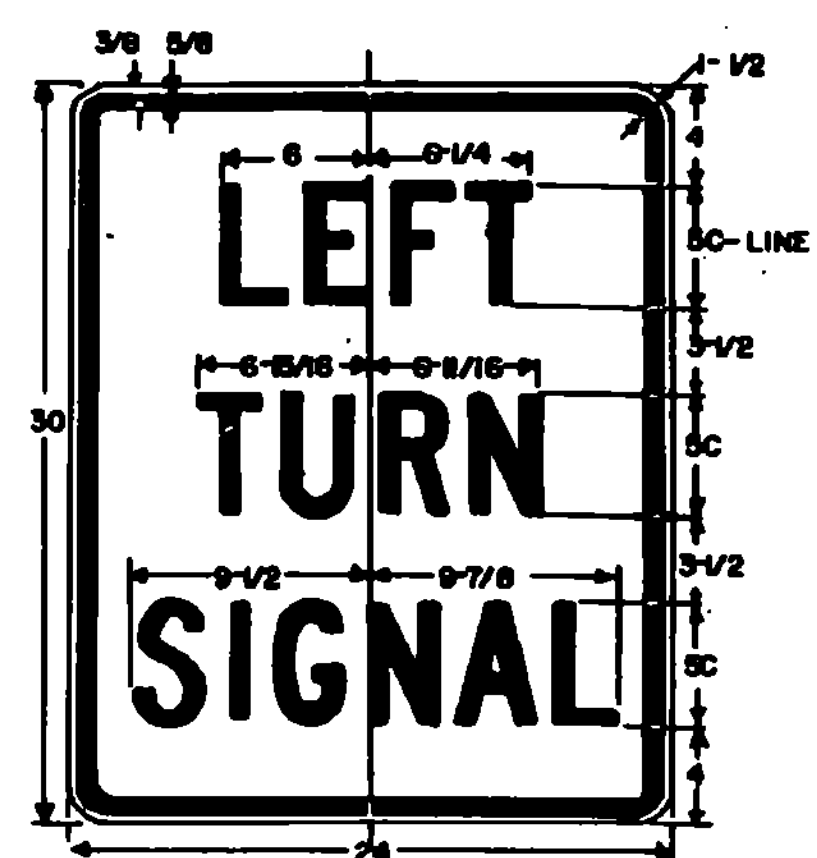
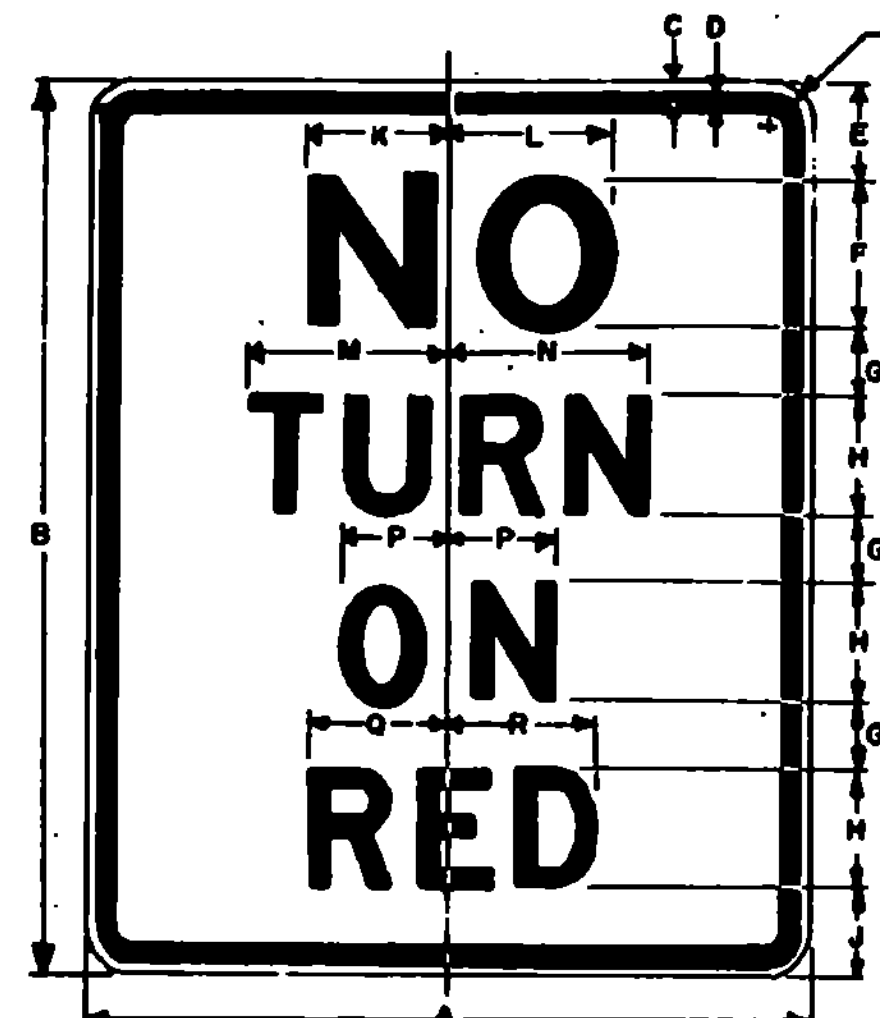
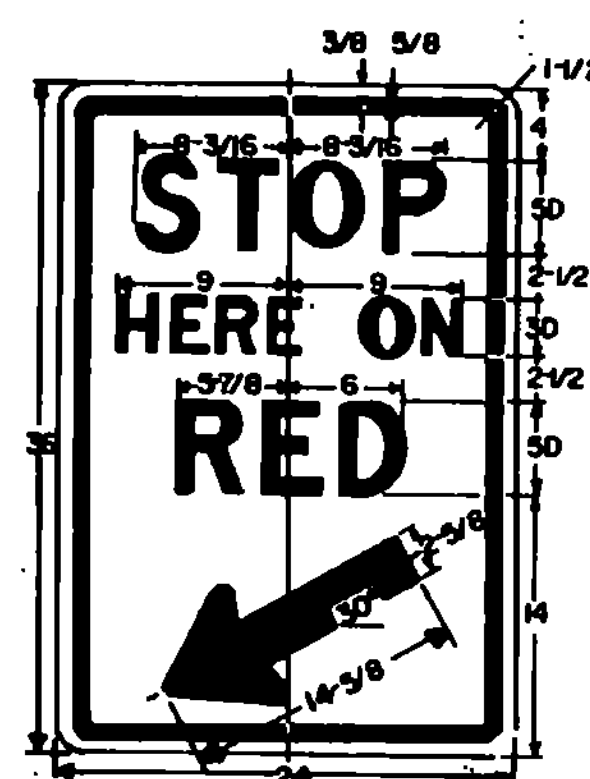
REVISIONS & CORRECTIONS
 FEB. 29, 1972: SIGN ADDED UNDER DIRECTION OF FEDERAL HIGHWAY ADMINISTRATION
 MAY 14, 1974: REFLECTIVE MATERIAL CHANGE.
 JUNE 8, 1977: REFLECTIVE MATERIAL NOTE CHANGED. SIGNS REFERENCED TO NUMBERS IN M.U.T.C.D. SIGNS NUMBERED.
 AUG. 4, 1977: FLAGPERSON SIGN CHANGED TO SYMBOL.
 SEPT. 12, 1977: NOTE ADDED FOR REDUCED NUMBER AND SIZE OF SIGNS.
 JUNE 8, 1978: REVISED REDUCED SPEED SIGN PER FHWA.
 NOV. 23, 1981: "WORK AREA" LEGEND AND NOTES ADDED, GENERAL SIGN REVISIONS.
 JUNE 18, 1983: TRUCK/TRAILER W/ FLASHER NOTE CLARIFIED.
 FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED: *Jan. 26, 1972*
 DATE: *P. H. Arnold*
 CHIEF ENGINEER
E. H. Stickney
 ASST. CHIEF ENGINEER
G. M. Lane
 HIGHWAY ENGINEER

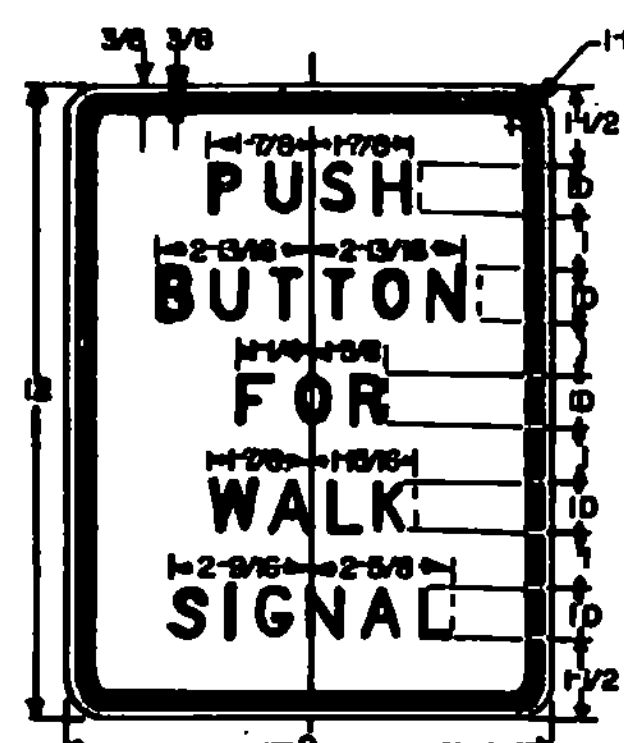
TYPICAL MAJOR MAINTENANCE OPERATION (BRIDGE AND ROADWAY) APPROACH SIGNS



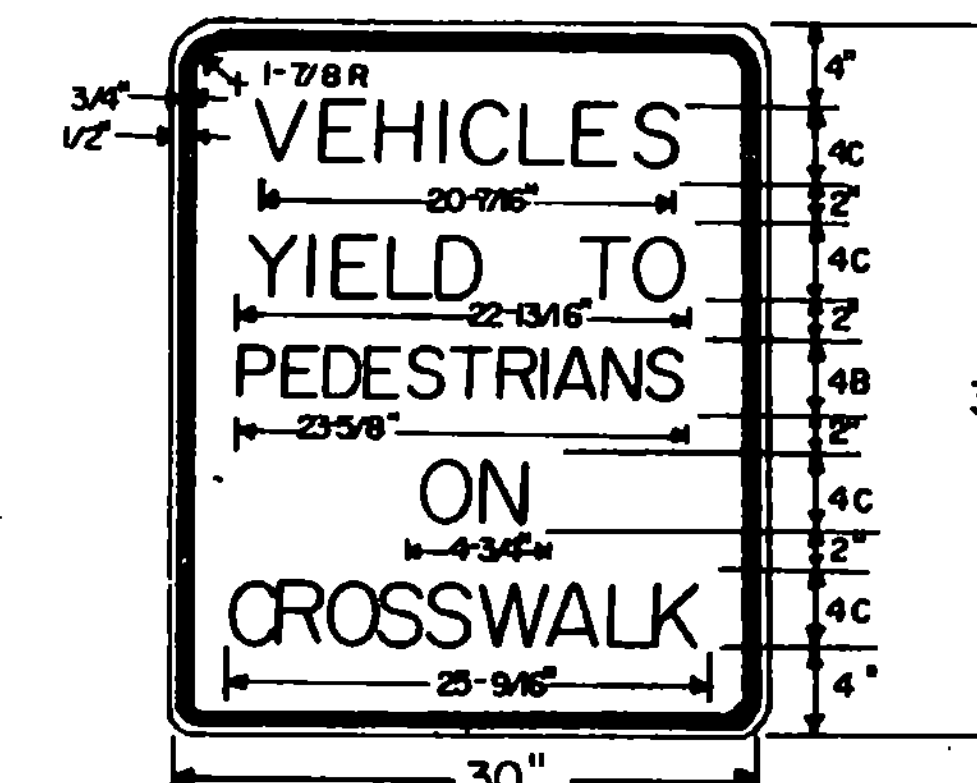
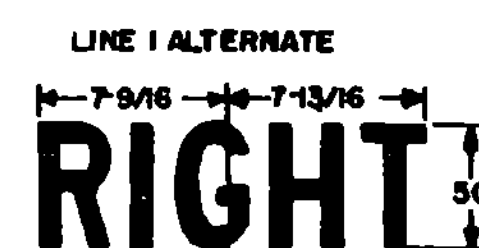
STANDARD
 E-8



ARROW HEAD	DIMENSIONS (INCHES)				
	SIZE	A	B	C	D
MINIMUM & STD.	24 X 36	4-3/4	5-5/8	1/2	3/4
SPECIAL	36 X 48	7-1/8	8-1/2	5/8	1-1/8



SIGN	DIMENSIONS (INCHES)															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
MIN.	18	24	3/8	5/8	3	4E	1-3/4	3D	2-3/4	3-7/8	4-1/8	5	4-7/8	2-5/8	3-7/8	3-11/8
STD.	24	30	3/8	5/8	3-1/4	5E	2-1/4	4D	3	4-3/4	5-3/8	6-5/8	6-1/2	3-1/2	4-5/8	4-7/8
SPECIAL	36	48	5/8	7/8	6	6E	3-1/2	6D	5-1/2	7-3/4	8-1/4	10	9-3/4	5-1/4	6-7/8	7-3/8



COLORS:
THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT ON REFLECTORIZED WHITE BACKGROUND. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

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

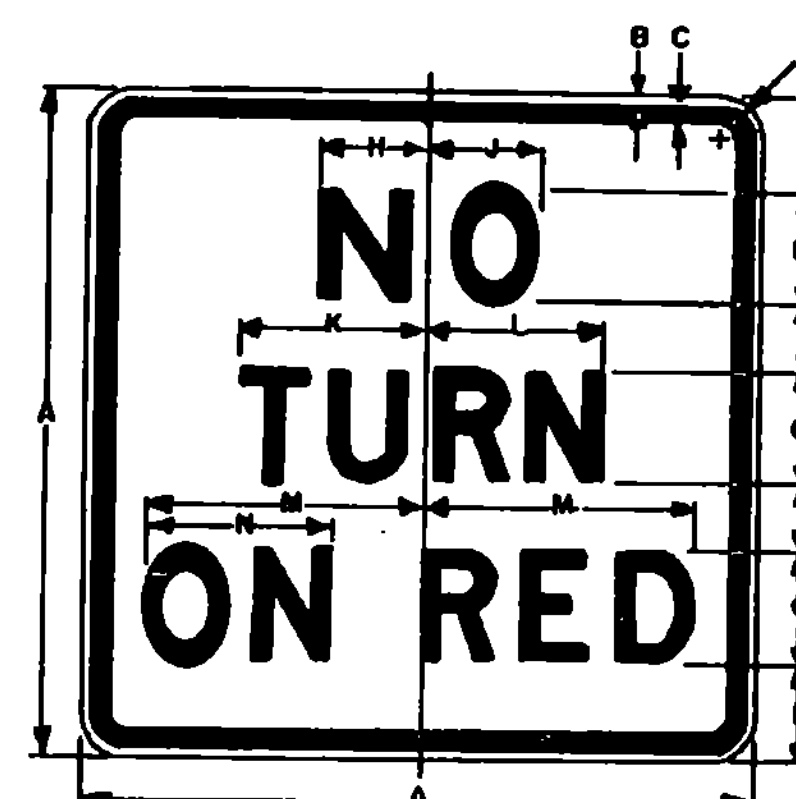
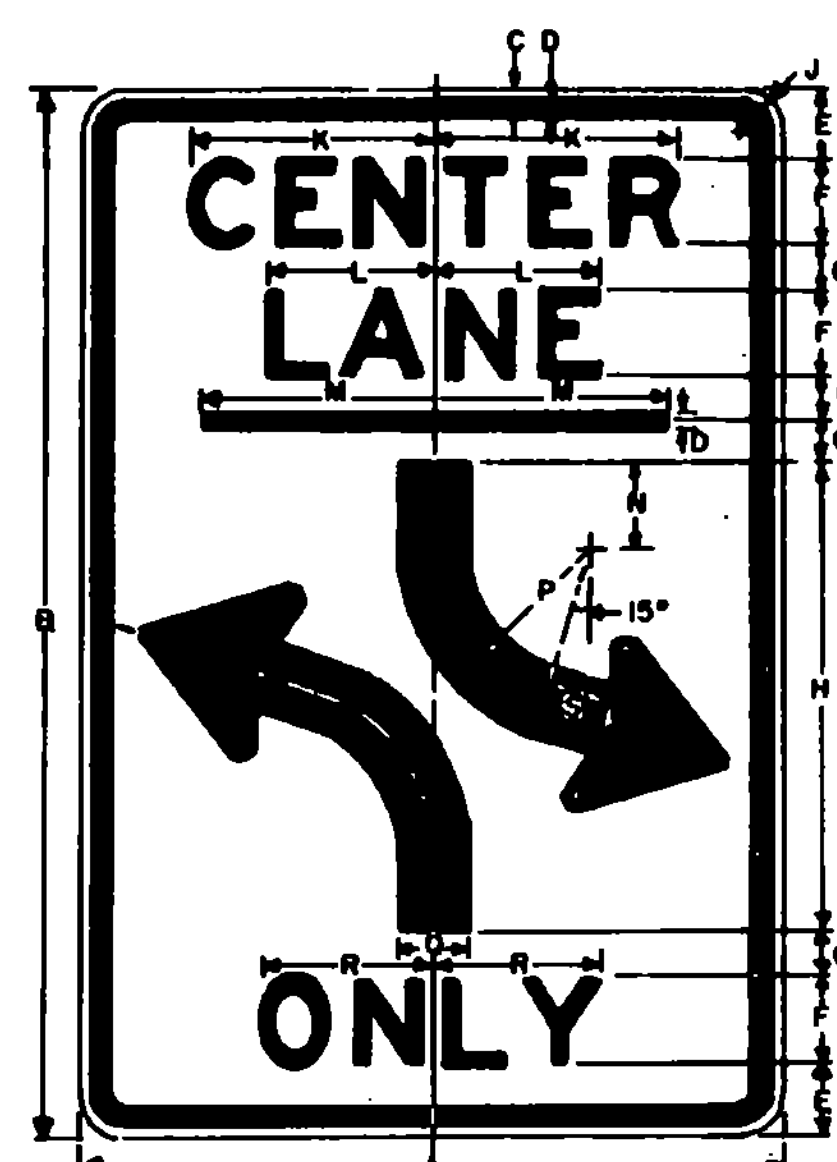
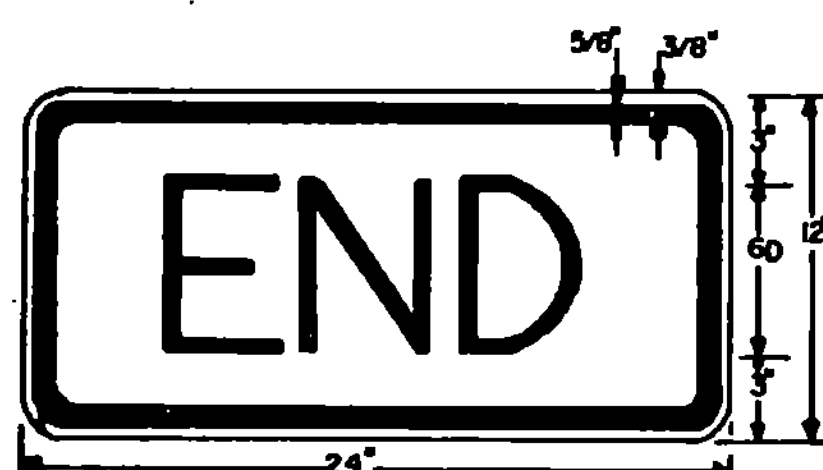
	9"X12"	24"X36"	36"X36"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"
HIGH DENSITY OVERLAP PLYWOOD	1/2"	1/2"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE FLAT TOP WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. WHEN MOUNTED OVERHEAD ALL SIGNS SHALL HAVE HIGH INTENSITY ENCAPSULATED LENS REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN.

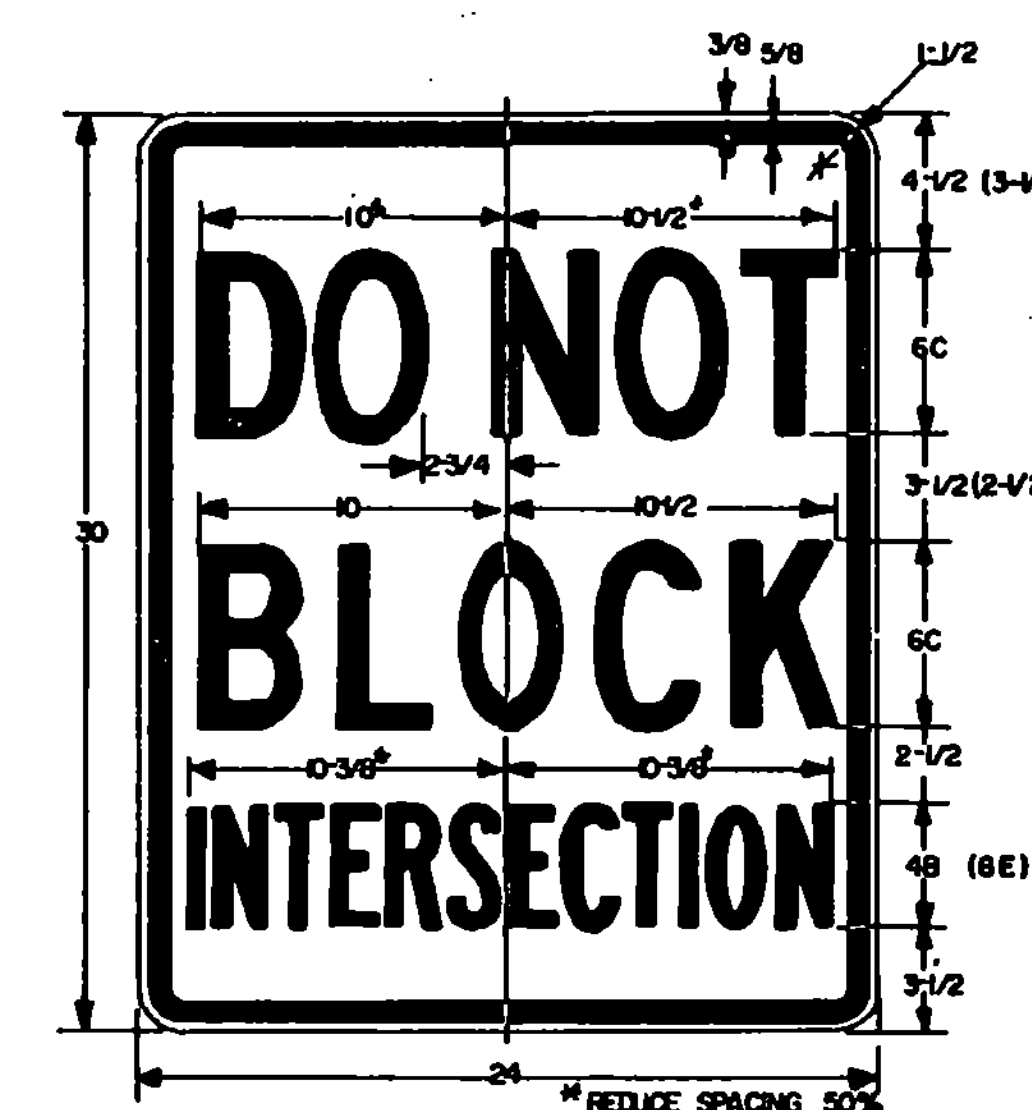
THE TEXT OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

TEXT DESIGN:
LETTERS, DIGITS, ARROWS, SPACINGS, AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

SPECIFICATIONS
REGULATORY SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.



SIGN	DIMENSIONS (INCHES)															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
MIN.	18	3/8	5/8	2-3/4	3E	1-3/4	3D	2-5/8	3-1/8	5	4-7/8	7-1/8	5-1/4	1-1/2		
STD.	24	3/8	5/8	3-1/2	4E	2-1/2	4D	3-7/8	4-7/8	6-1/2	9-1/2	6-1/2	1-1/2			
SPECIAL	30	1/2	3/4	4-1/2	5E	3D	5D	4-3/4	5-3/8	8-1/4	11-7/8	7-3/4	1-7/8			



() INDICATES DIMENSIONS FOR "DO NOT BLOCK DRIVE" SIGN

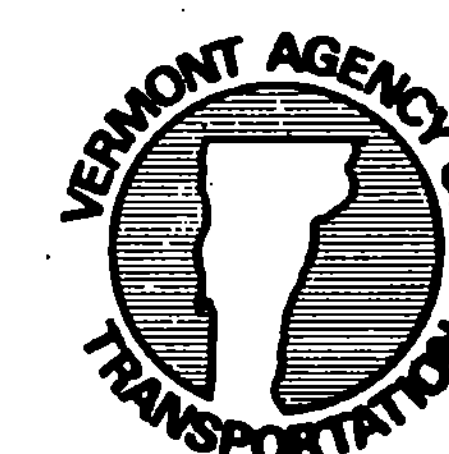


SIGN	DIMENSION (INCHES)															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
STD. & MIN.	24	36	3/8	5/8	2-1/2	3E	1-1/2	15	1-1/2	8-7/8	5-3/4	8	2-7/2	6	2	5-5/8
SPECIAL	36	48	5/8	7/8	3-1/2	5E	1-1/2	20	2-1/4	11-1/8	9-1/2	12	3	8	3	9-7/8

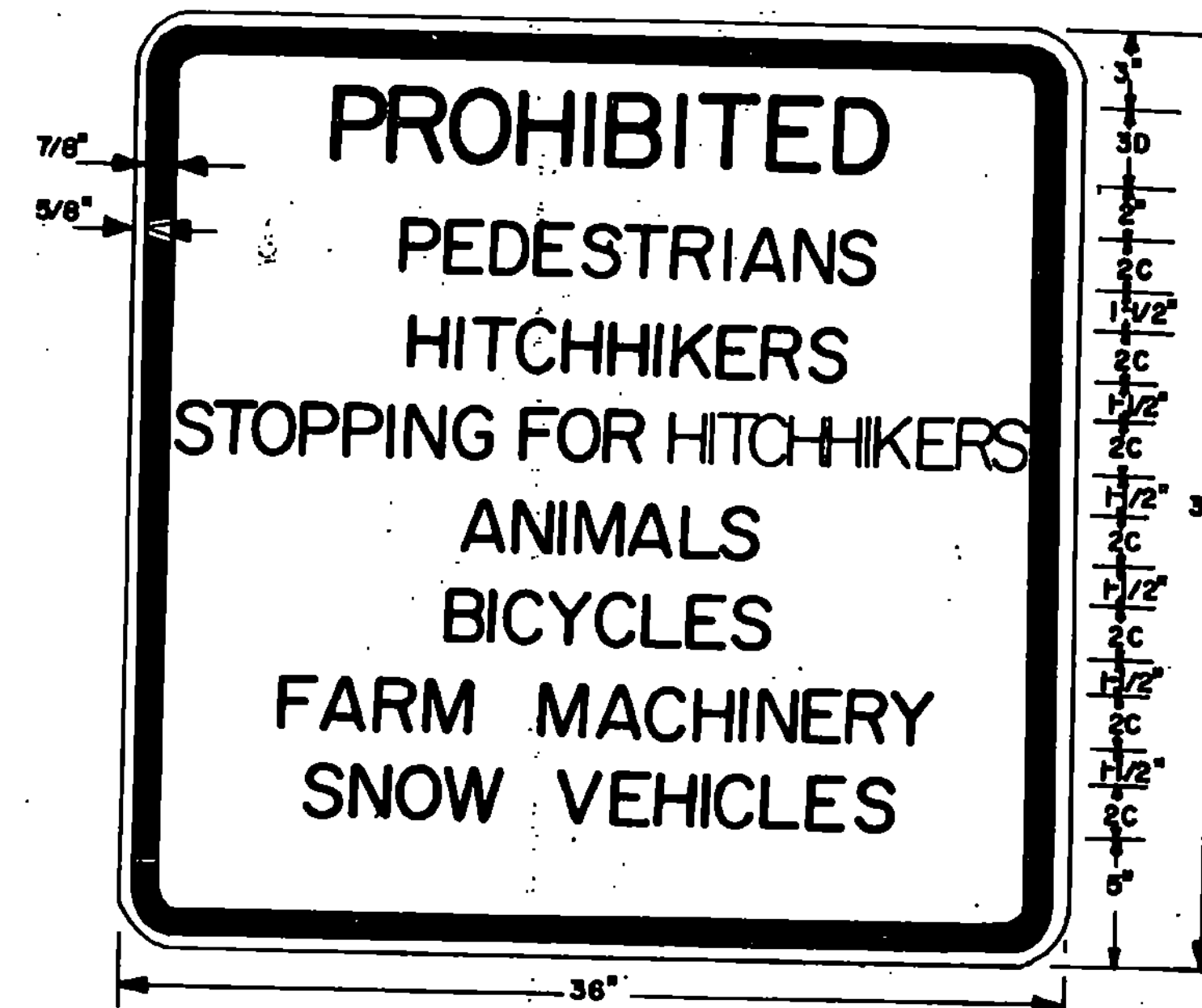
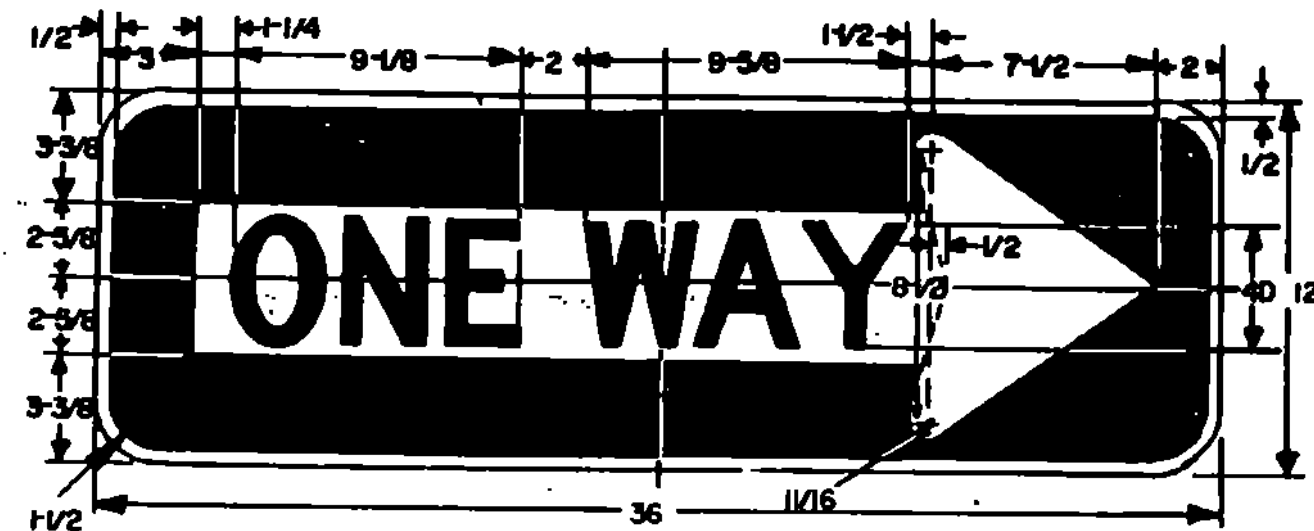
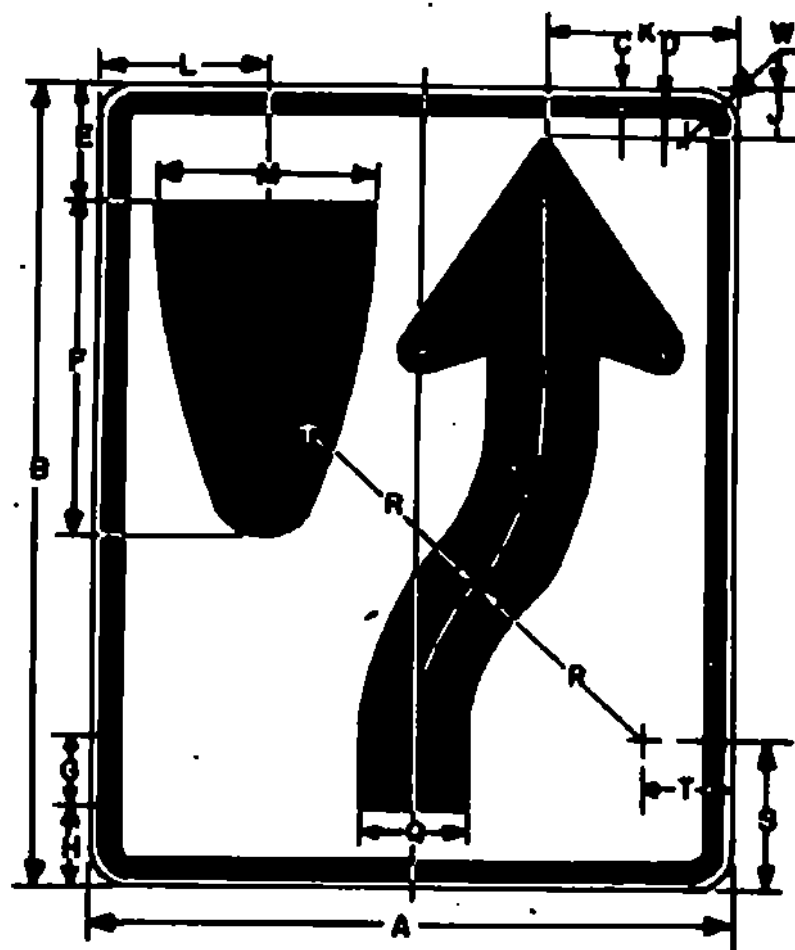
REVISIONS AND CORRECTIONS
JULY 2, 1984 - ADDITIONAL SIGNS ADDED
FEB. 2, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED: JULY 29, 1991
DATE
S. J. Gage, P.E.
DIRECTOR OF ENGINEERING AND CONSTRUCTION
CHIEF OF DESIGN
TRANSPORTATION DESIGN ENGINEER

REGULATORY SIGNS

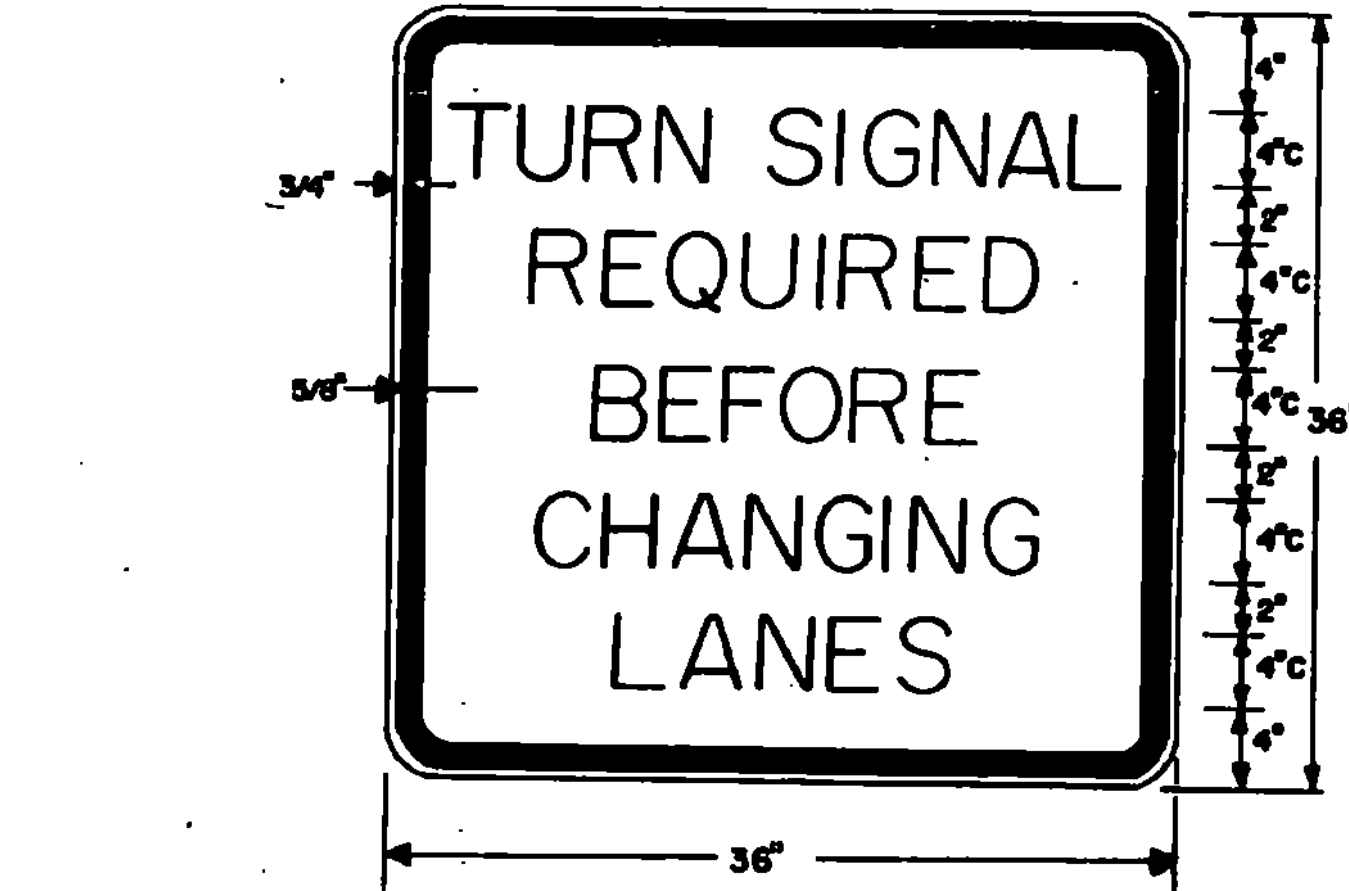
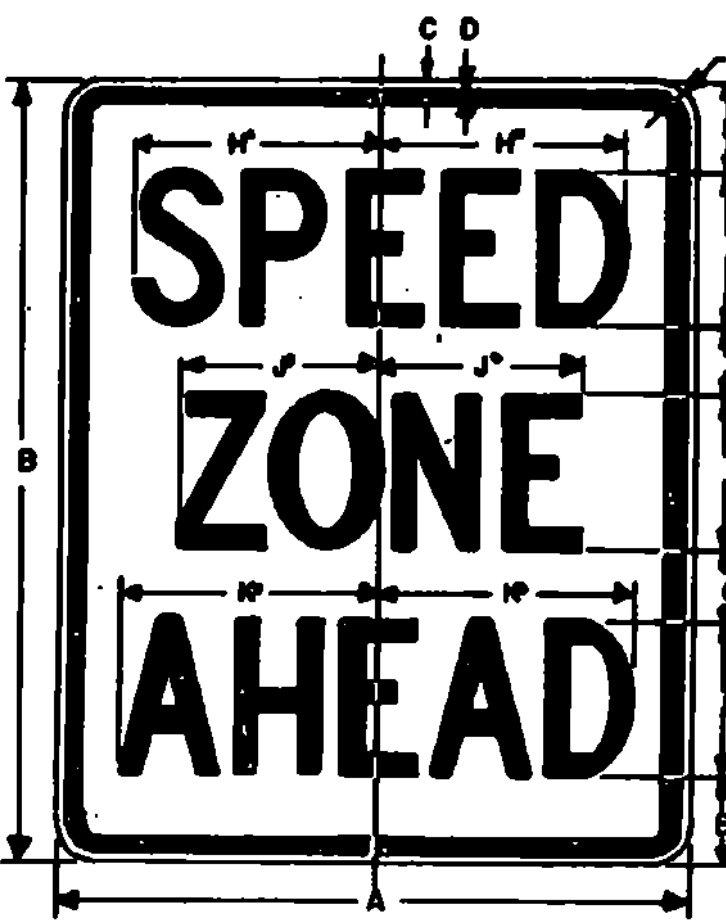


STANDARD
E-15



SIGN	A	B	C	D	E	F	G	H	I	J	K
MIN.	18	24	3/8	5/8	3-3/8	9-3/8	1-7/8	2-1/4	1-3/8	5-1/2	
STD.	24	30	3/8	5/8	4-1/2	12-1/2	2-1/2	3	1-7/8	7-3/8	
EXPWY.	36	48	5/8	7/8	6-3/4	18-3/4	3-3/4	4-1/2	2-13/16	11-1/8	
FWY.	48	60	3/4	1-1/4	9	25	5	6	3-3/4	14-13/16	

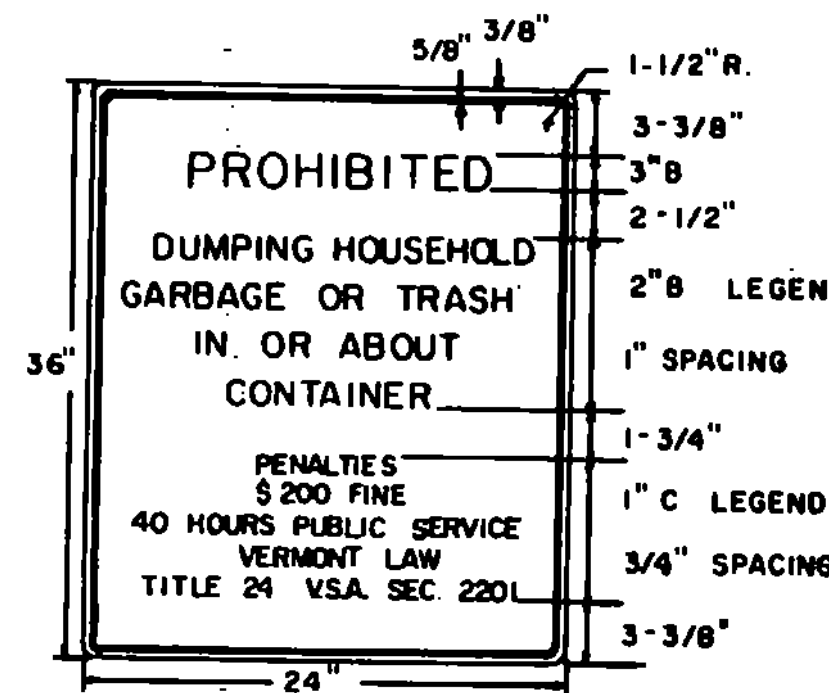
SIGN	L	M	N	P	Q	R	S	T	U	V	W
MIN.	4-11/16	6	22-1/2	1-1/2	3	6-3/4	4-1/8	2-1/4	1-1/16	7/16	1-1/2
STD.	6-1/4	8	30	2	4	9	5-1/2	3	1-3/8	2-13/16	1-1/2
EXPWY.	9-3/8	12	48	3	6	13-1/2	8-1/4	4-1/2	2	2-3/4	2-1/4
FWY.	12-1/2	16	60	4	8	18	11	6	2-11/16	5	3



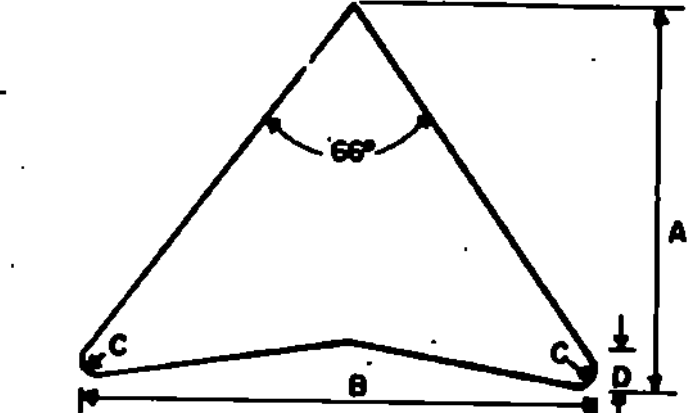
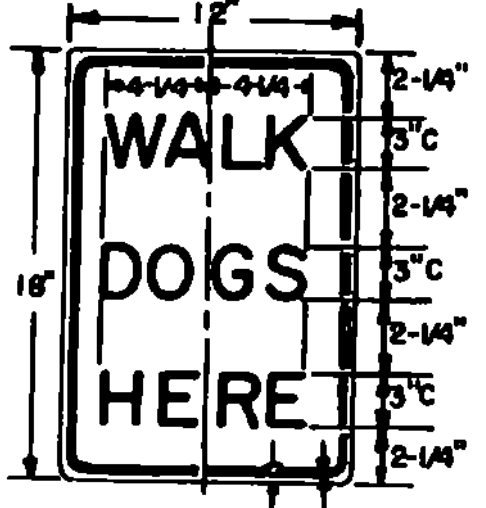
SIGN	A	B	C	D	E	F	G	H	I	J	K	L
MIN.	18	24	3/8	5/8	3	3E	2	8E	1-1/2	7-3/16	9-1/2	
STD.	24	30	3/8	5/8	4	4E	2	10E	1-1/2	9-9/16	7-5/16	
EXPWY.	36	48	5/8	7/8	6	6E	5	14E	2-1/4	14-3/8	11	
FWY.	48	60	3/4	1-1/4	8	8E	4	20E	3	19-1/8	14-5/8	



SIGN	A	B	C	D	E	F	G	H	I	J	K	L
STD. & MIN.	24	30	3/8	5/8	4	4C	2	10D	1-1/2	9-5/16	6-13/16	
EXPWY.	36	48	5/8	7/8	6	6C	5	14D	2-1/4	13-5/4	10-3/16	
FWY.	48	60	3/4	1-1/4	8	8C	6	18D	3	18-3/8	13-5/8	

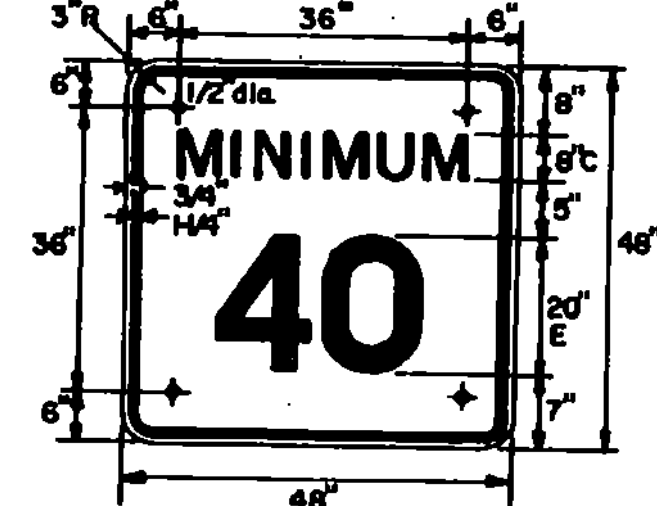


SIGN	A	B	C	D	E	F	G	H	I	J	K	L
MIN.	18	24	3/8	5/8	3-1/2	4C	2-1/2	6-13/16	5-1/2	7	1-1/2	
STD.	24	30	3/8	5/8	3-1/2	6C	2-1/2	9-3/16	7-9/16	9-3/4	1-1/2	
EXPWY.	36	48	5/8	7/8	7	8C	5	13-5/8	11-1/16	14	2-1/4	
FWY.	48	60	3/4	1-1/4	9	10C	6	17	15-13/16	17-1/2	3	



ARROW HEAD	SIZE	A	B	C	D
MINIMUM	18X24	7-1/8	8-1/2	5/8	1-1/8
STANDARD	24X30	9-1/2	11-3/8	1	1-1/2
EXPRESSWAY	36X48	14-1/4	17	1-3/8	2-1/4
FREEWAY	48X60	19	22-5/8	1-7/8	3

SIGN	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
EXPWY.	30	24	3/8	5/8	3-1/2	4C	2-1/2	4D	12-1/2	13	2-3/4	6-7/16	7	1-1/2	
FWY.	48	36	5/8	7/8	5	6D	4	6D	20-7/16	2-1/8	19-1/8	10-1/16	10-3/16	2-1/4	



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

	12"X18"	24"X24"	36"X12"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"
HIGH DENSITY OVERLAP PLYWOOD	1/2"	1/2"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE FLAT TOP 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. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

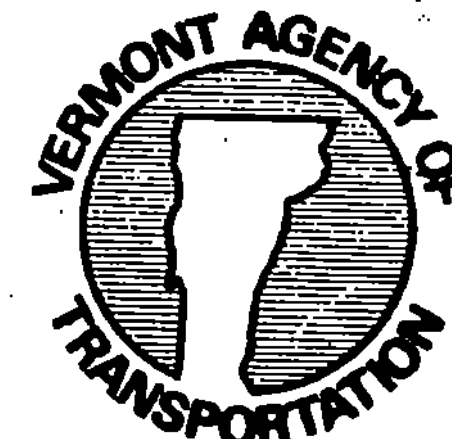
SPECIFICATIONS:
REGULATORY SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

TEXT DESIGN:
LETTERS, DIGITS, ARROWS, SPACINGS, AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

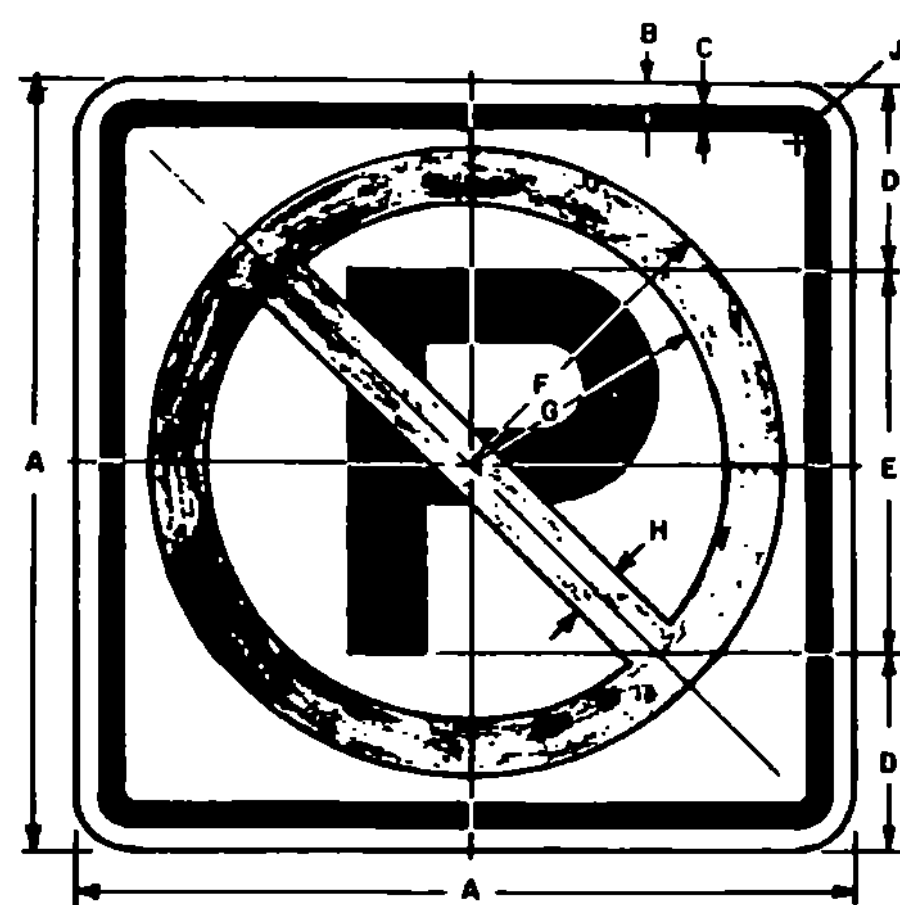
REVISIONS AND CORRECTIONS
SEPT. 28, 1984 - ADDED "MINIMUM 40" SIGN - CHANGED "SPEED LIMIT 50" (FWY. - G & H)
- CHANGED "PROHIBITED DUMPING HOUSEHOLD GARBAGE" SIGN
DEC. 27, 1984 - CLARIFIED KEEP RIGHT SYMBOL
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED
DATE JULY 18, 1984
DIRECTOR OF ENGINEERING AND CONSTRUCTION
CHIEF OF DESIGN
SURVEY AND PLANS ENGINEER

REGULATORY SIGNS

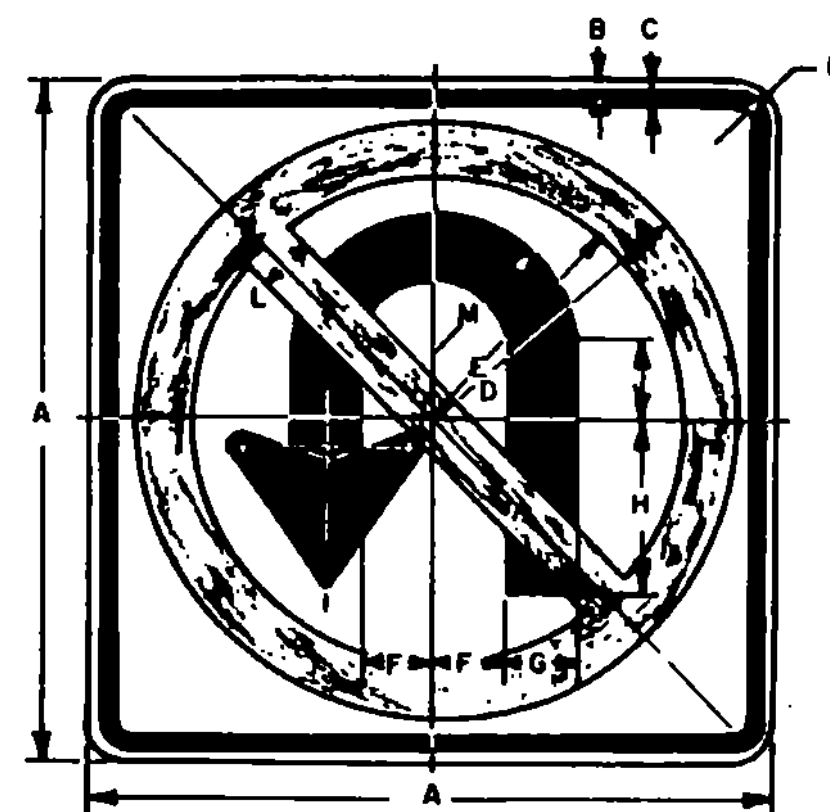


STANDARD
E-15B



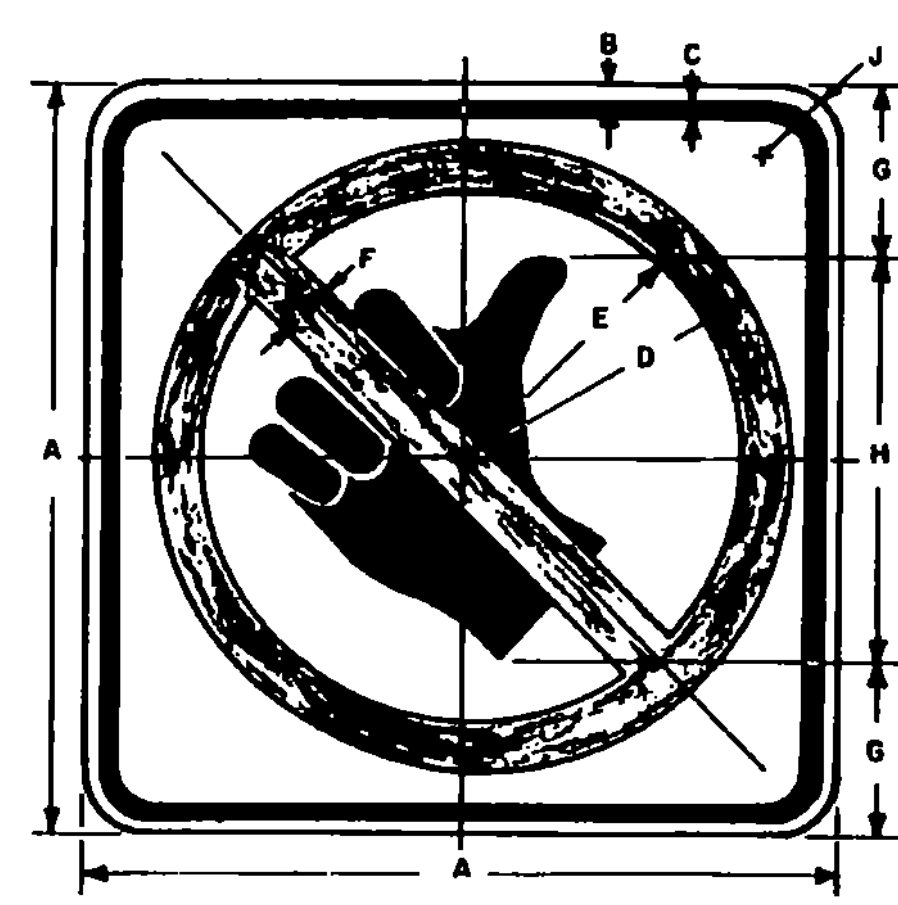
COLORS
CIRCLE AND DIAGONAL - RED (REFL-RURAL)
SYMBOL AND BORDER - BLACK (NON-REFL)
BACKGROUND - WHITE (REFL-RURAL)

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
URBAN MIN. & STD.	12	3/8	3/8	3	6E(M)	4-7/8	3-7/8	1	1-1/2	
RURAL MIN. & STD.	24	3/8	5/8	6	12E(M)	10-1/2	8-1/2	2	1-1/2	
EXPWY.	36	5/8	7/8	9	18E(M)	15-3/4	12-3/4	3	2-1/4	
FWY.	48	3/4	1-1/4	12	24E(M)	21	17	4	3	



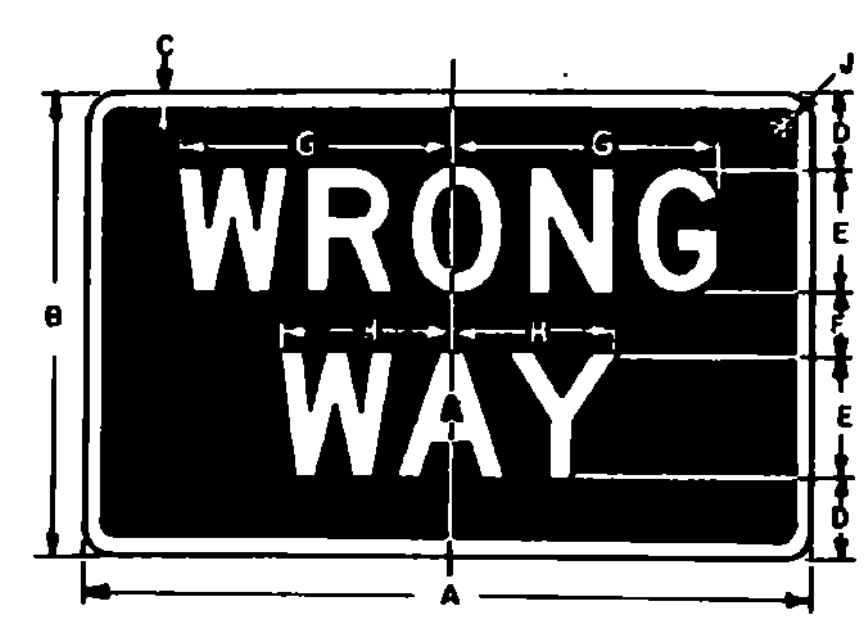
COLORS
CIRCLE AND DIAGONAL - RED (REFL)
ARROW AND BORDER - BLACK (NON-REFL)
BACKGROUND - WHITE (REFL)

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	
STD. & MIN.	24	3/8	5/8	10-1/2	8-1/2	2-1/2	2-1/2	6	2-1/4	1-1/2	2	5	
SPECIAL	30	1/2	3/4	13-1/8	10-5/8	3-1/8	3-1/8	7-1/2	2-13/16	1-7/8	2-1/2	6-1/4	
EXPWY.	36	5/8	7/8	15-3/4	12-3/4	3-3/4	3-3/4	9	3-3/8	2-1/4	3	7-1/2	
SPECIAL	48	3/4	1-1/4	21	17	5	5	12	4-1/2	3	4	10	



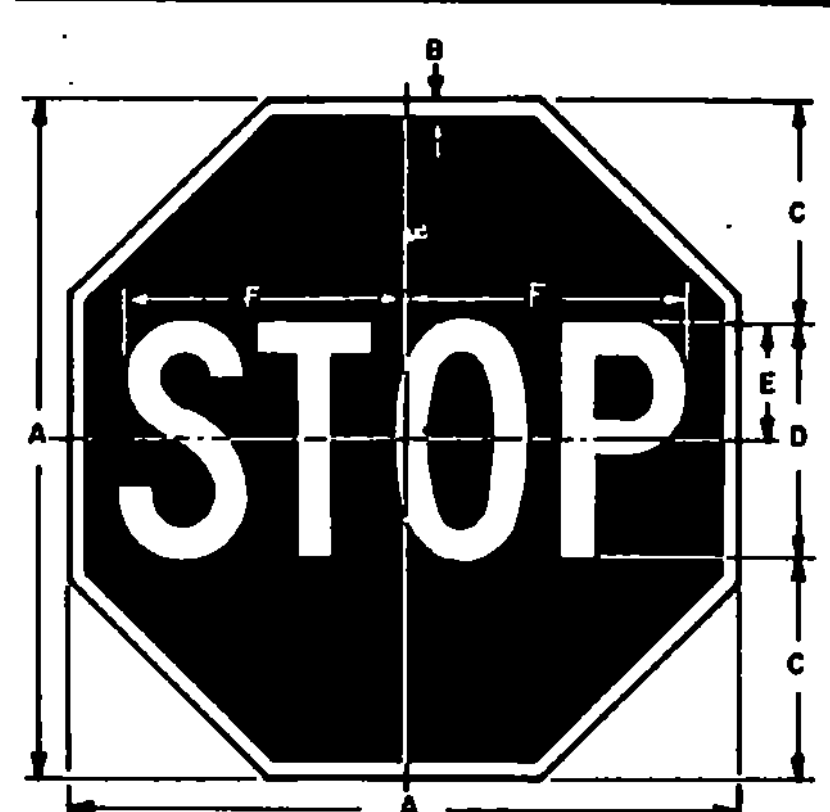
COLORS
CIRCLE AND DIAGONAL - RED (REFL)
SYMBOL AND BORDER - BLACK (NON-REFL)
BACKGROUND - WHITE (REFL)

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
MIN.	18	3/8	5/8	7-7/8	6-3/8	1-1/2	3-3/4	10-1/2	1-1/2	
STD.	24	3/8	5/8	10-1/2	8-1/2	2	5	14	1-1/2	



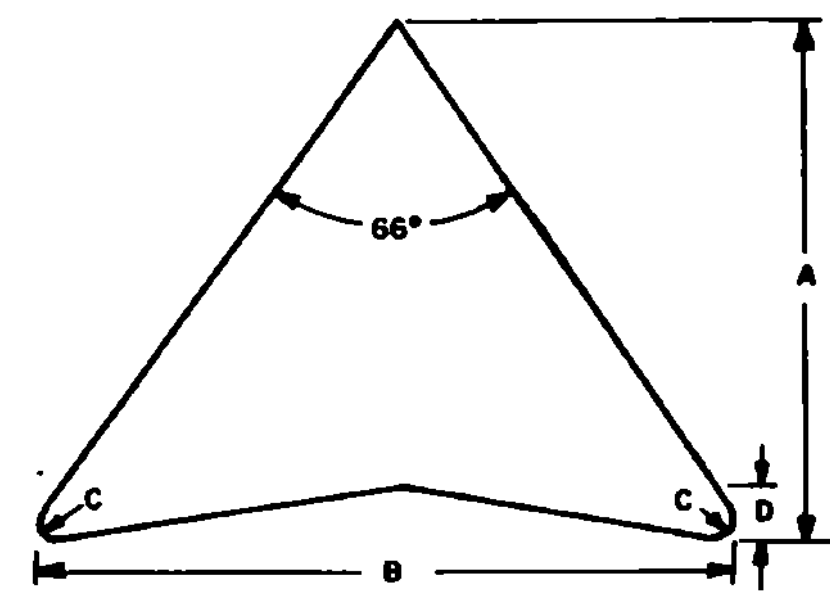
COLORS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
MIN.	30	18	5/8	3	5D	2	11-1/16	6-11/16	1-1/2	
STD.	36	24	3/4	4-1/2	6D	3	13-5/16	8-1/8	1-1/2	
SPECIAL	42	30	7/8	5	8D	4	17-3/4	10-3/4	1-7/8	

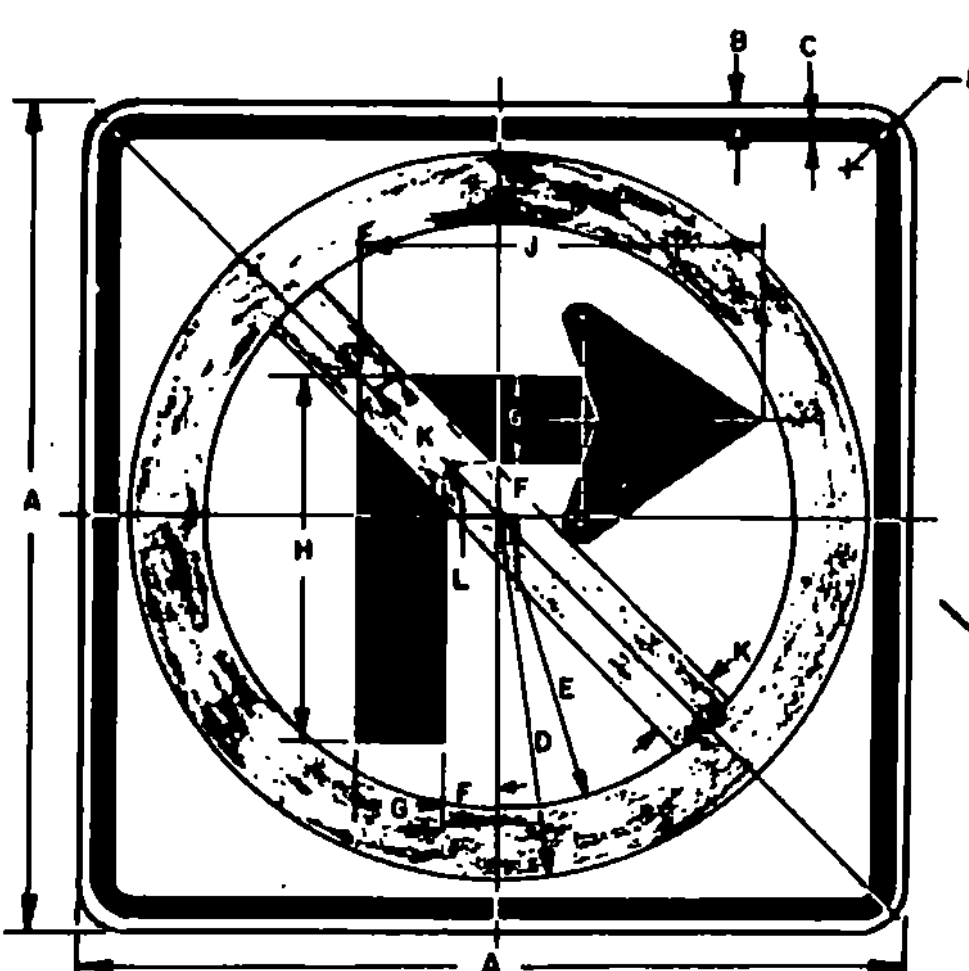


COLORS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)

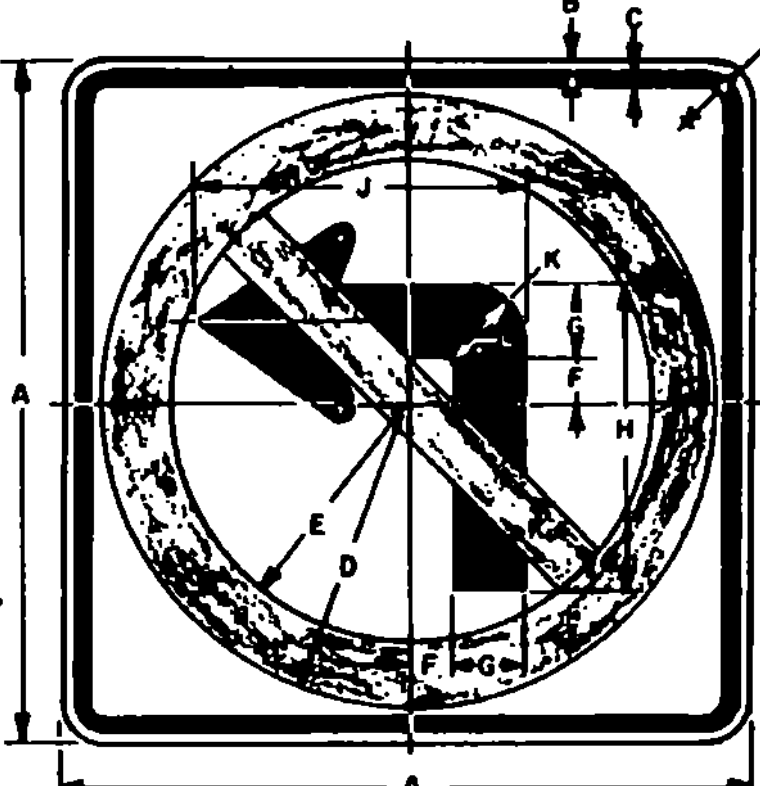
SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
BIKE	18	3/8	6	6C	3	7-3/4
MIN.	24	5/8	8	8C	4	10
STD.	30	3/4	10	10C	5	12-1/2
EXPWY.	36	7/8	12	12C	6	15
SPECIAL	48	1-1/4	16	16C	8	20



HEAD	DIMENSIONS (INCHES)			
	SIZE	A	B	D
MIN. & STD.	24" X 24"	6	7-1/8	5/8
SPECIAL	30" X 30"	7-1/2	8-7/8	3/4
EXPWY.	36" X 36"	8-7/8	10-5/8	7/8
SPECIAL	48" X 48"	11-7/8	14-1/8	1-1/8

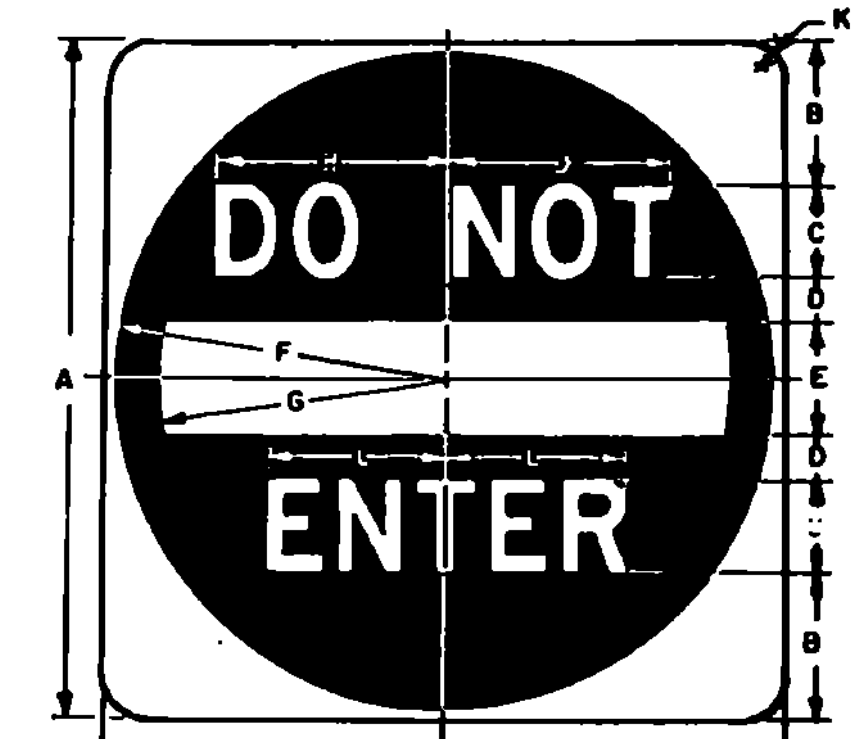


COLORS
CIRCLE & DIAGONAL - RED (REFL)
ARROW & BORDER - BLACK (NON-REFL)
BACKGROUND - WHITE (REFL)



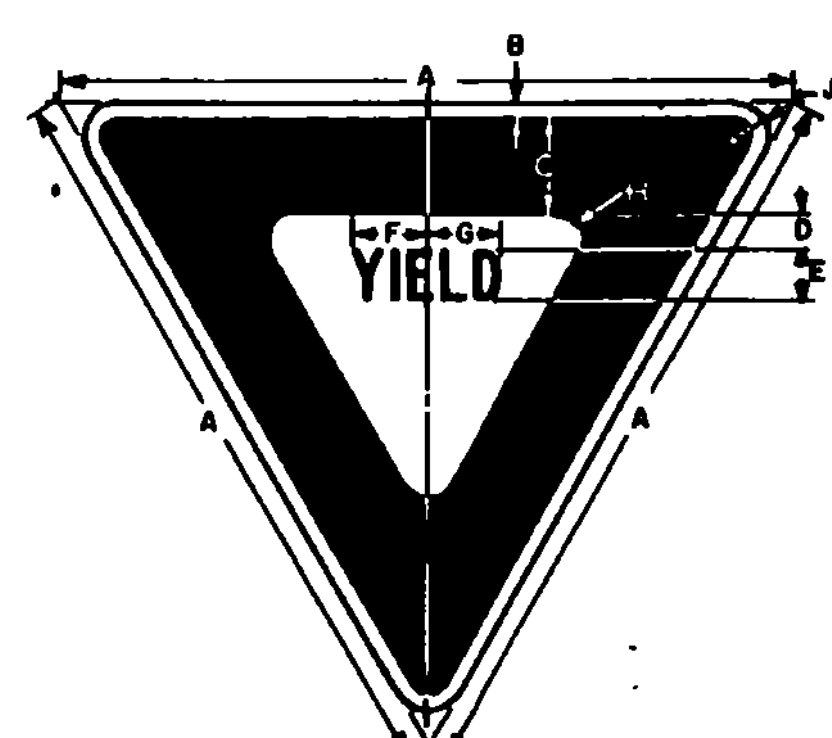
COLORS & DIMENSIONS
APPLY TO BOTH SIGNS

SIGN	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	
STD. & MIN.	24	3/8	5/8	10-1/2	8-1/2	1-1/2	2-1/2	10-1/2	1-1/2	2	1/2	
SPECIAL	30	1/2	3/4	13-1/8	10-5/8	1-7/8	3-1/8	13-1/8	14-1/2	2-1/2	5/8	
EXPWY.	36	5/8	7/8	15-3/4	12-3/4	2-1/4	3-3/4	15-3/4	17-1/4	3	3/4	
SPECIAL	48	3/4	1-1/4	21	17	3	5	21	23	4	1	



COLORS
SYMBOL - RED (REFL)
LEGEND & BACKGROUND - WHITE (REFL)

SIGN	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	
STD. & MIN.	30	6-1/2	4D	2	5	14-1/2	12-1/2	9-3/4	10	1-7/8	7-7/8	
EXPWY.	36	7-1/2	5D	2-1/2	6	17-1/2	15	12	12 3/8	2-1/4	9-13/16	
SPECIAL	48	11	6D	3	8	23-1/2	20	14-1/2	15	3	11-3/4	



COLORS
LEGEND & BORDER - RED (REFL)
BACKGROUND - WHITE (REFL)

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
BIKE	24	3/8	3	1-3/8	2C	3-1/4	3	7/8	1-1/2	
MIN.	30	5/8	4	1-3/4	2-1/2C	3-5/8	3-5/8	7/8	1-1/2	
STD.	36	3/4	5	2	3C	4-1/8	4-3/8	1-1/4	2	
EXPWY.	48	1	6	2-3/4	4C	6-1/4	5-7/8	2	3	
FWY.	60	1-1/2	8	3-1/2	5C	7-7/8	7-1/4	2-1/2	4	

MATERIALS:

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

	12" X 12"	24" X 24"	36" X 36"	48" X 48"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"
HIGH DENSITY OVERLAIN PLYWOOD	1/2"	1/2"	5/8"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE	12 GAGE

THE REFLECTIVE MATERIAL SHALL BE ENCAPSULATED LENS WHITE OR SILVER 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. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

COLORS:

THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL BE AS DETAILED FOR EACH SIGN. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

SPECIFICATIONS:

REGULATORY SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

TEXT DESIGN:

LETTERS, DIGITS, ARROW, SPACINGS AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

REVISIONS AND CORRECTIONS
FEB. 3, 1986 - UPDATED TO 1986
SPECIFICATIONS

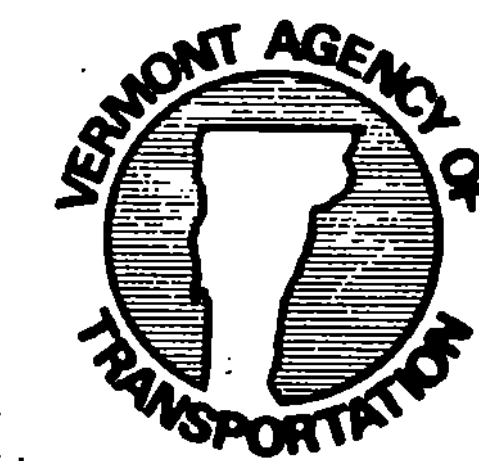
APPROVED

DATE JULY 18, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

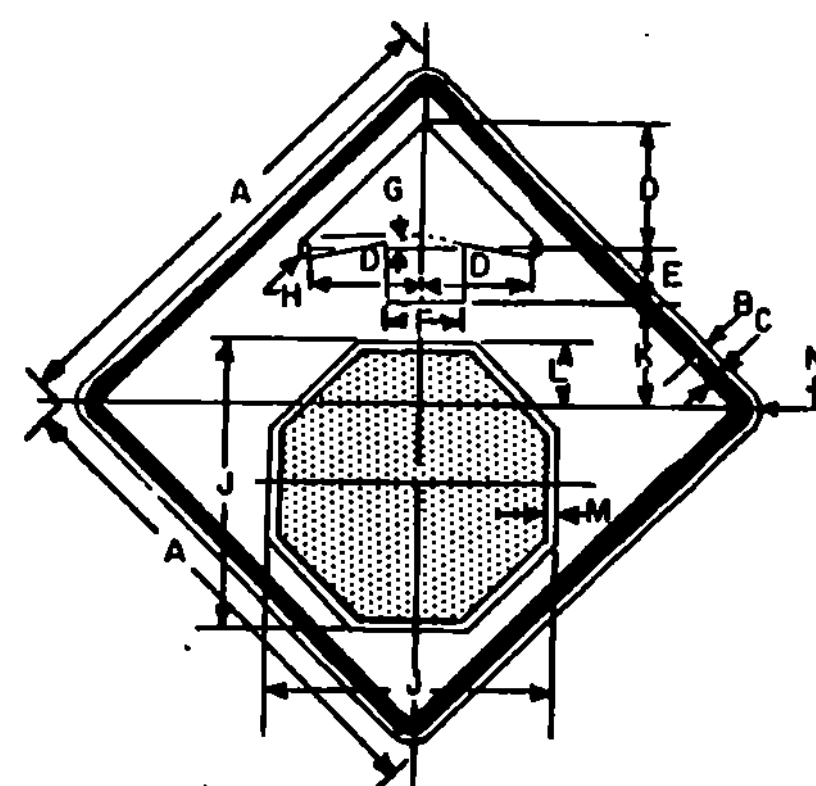
Arthur J. Goss
CHIEF OF DESIGN
John E. Evans
SURVEY AND PLANS ENGINEER

REGULATORY SIGNS



STANDARD

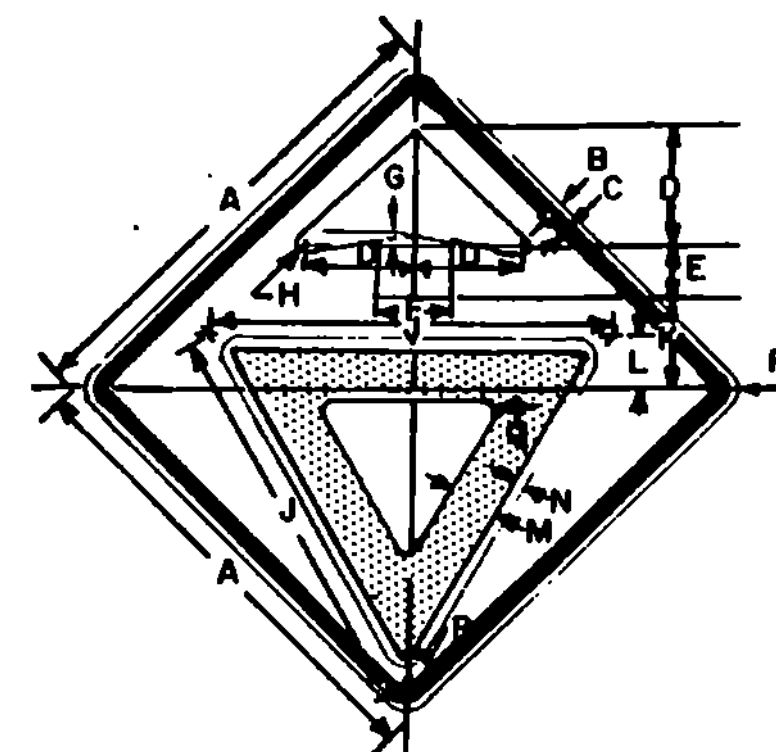
E-15C



COLORS

BORDER AND ARROW - BLACK (NON-REFL)
SYMBOL - WHITE BORDER ON RED BACKGROUND (REFL)
BACKGROUND - YELLOW (REFL)

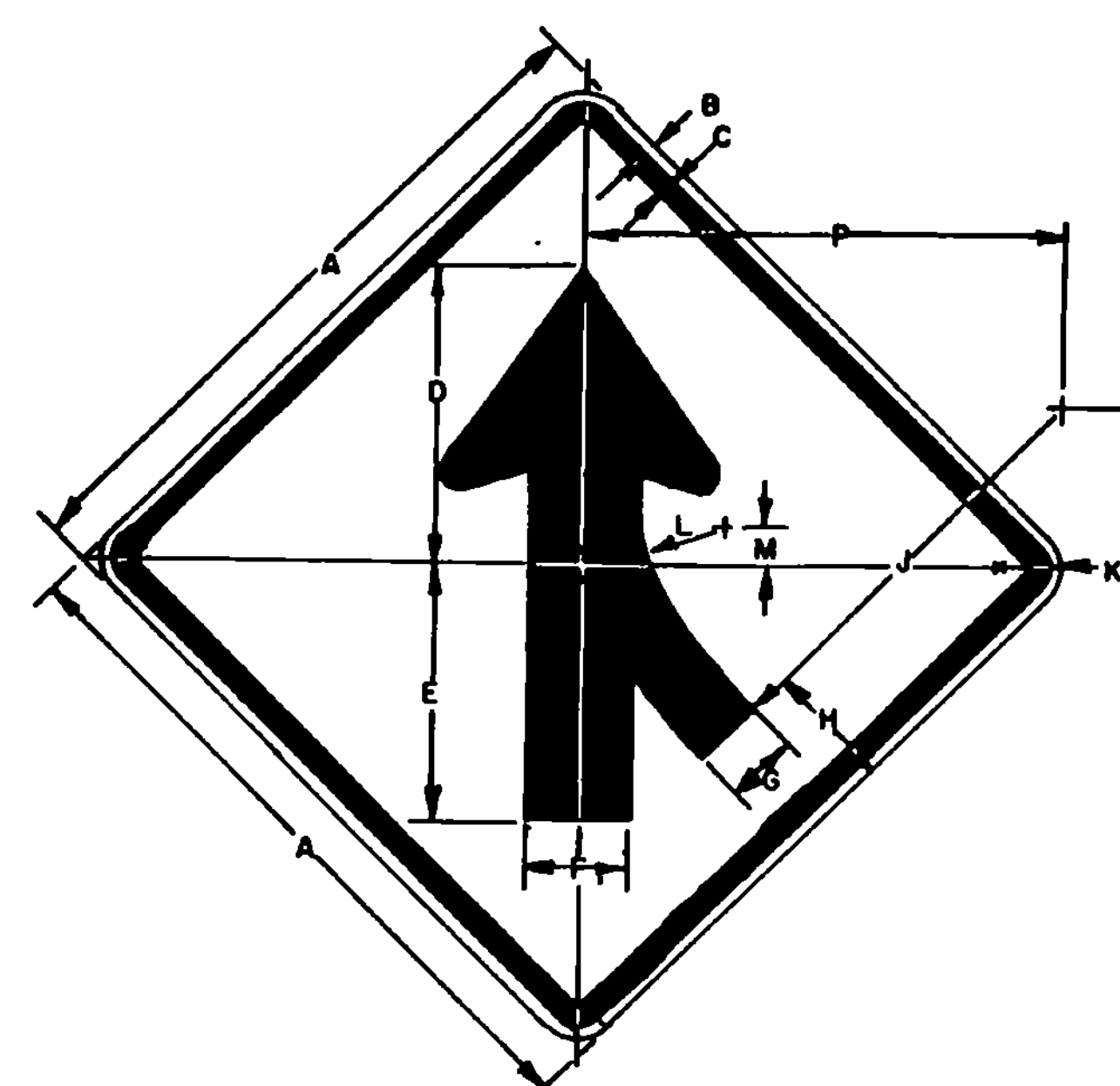
SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
MIN.	30	1/2	3/4	7-1/2	3-3/4	5	5/8	5/16	5-3/4	6-1/4	2-7/8	1/2	1-7/8	
STD.	36	5/8	7/8	9	4-1/2	6	3/4	3/8	19	7-1/2	3-1/8	5/8	2-1/4	
SPECIAL	48	3/4	1-1/4	12	6	8	1	1/2	25-1/8	10	4-1/2	3/4	3	



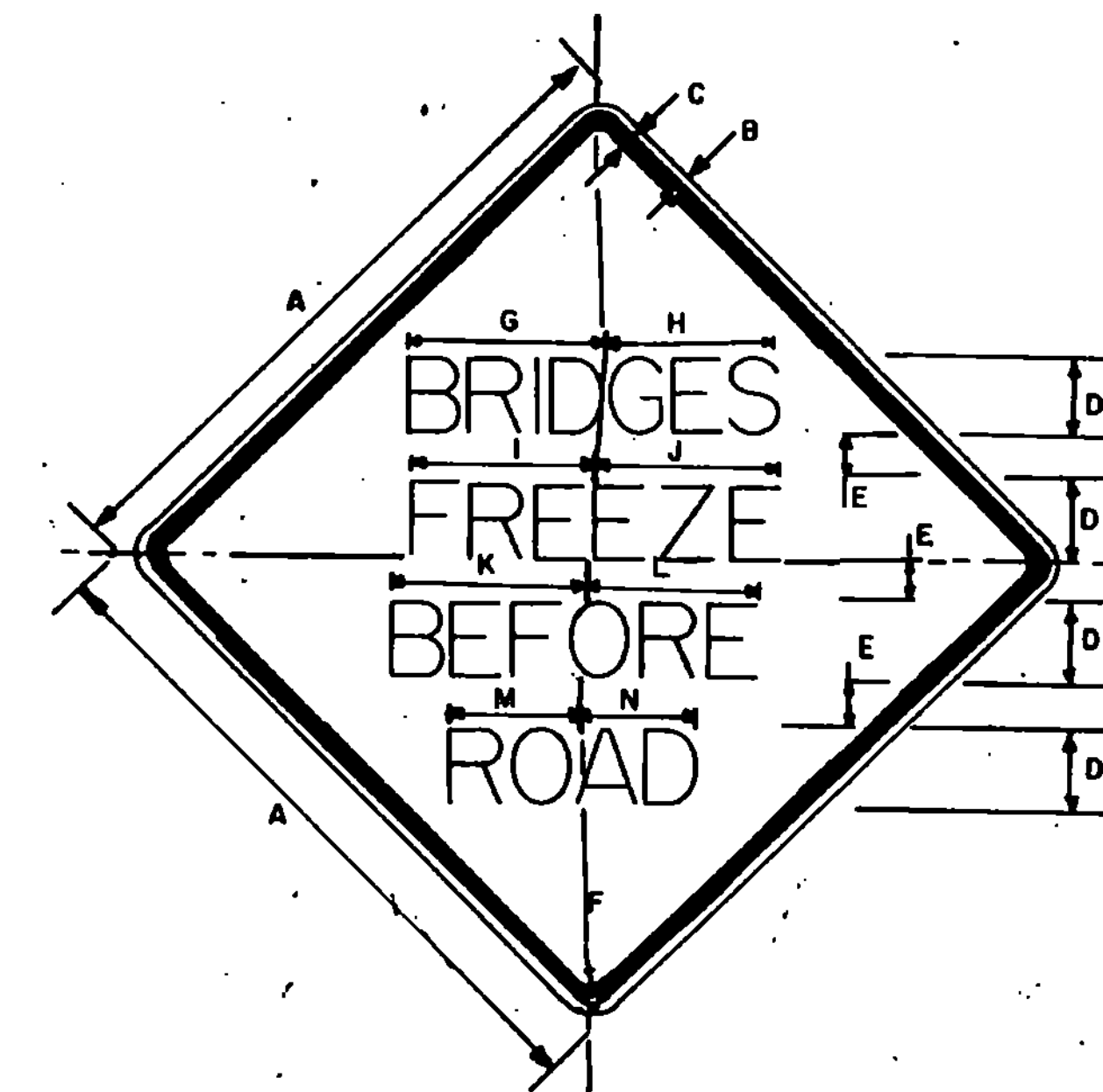
COLORS

BORDER AND ARROW - BLACK (NON-REFL)
SYMBOL - RED BORDER ON WHITE BACKGROUND (REFL)
BACKGROUND - YELLOW (REFL)

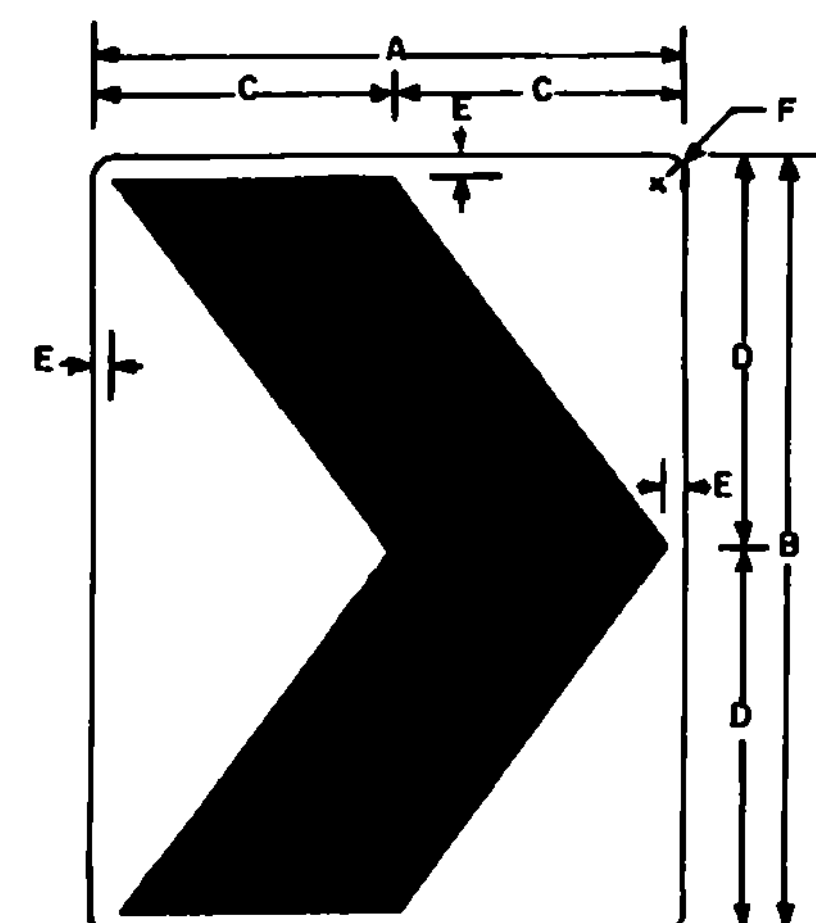
	DIMENSIONS (INCHES)															
SIGN	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
MIN.	30	1/2	3/4	7-1/2	3-3/4	5	5/8	5/16	25	6-1/4	3	3-3/8	1/2	1-1/4	5/8	1-7/8
STD.	36	5/8	7/8	9	4-1/2	6	3/4	3/8	28	7-1/2	3-3/8	3-3/4	5/8	1-3/8	3/4	2-1/4
SPECIAL	48	3/4	1-1/4	12	6	8	1	1/2	38	10	4-1/2	5	3/4	1-7/8	1	3



COLORS
LEGEND - BLACK (NON-REFL)
BACKGROUND - YELLOW (REFL)

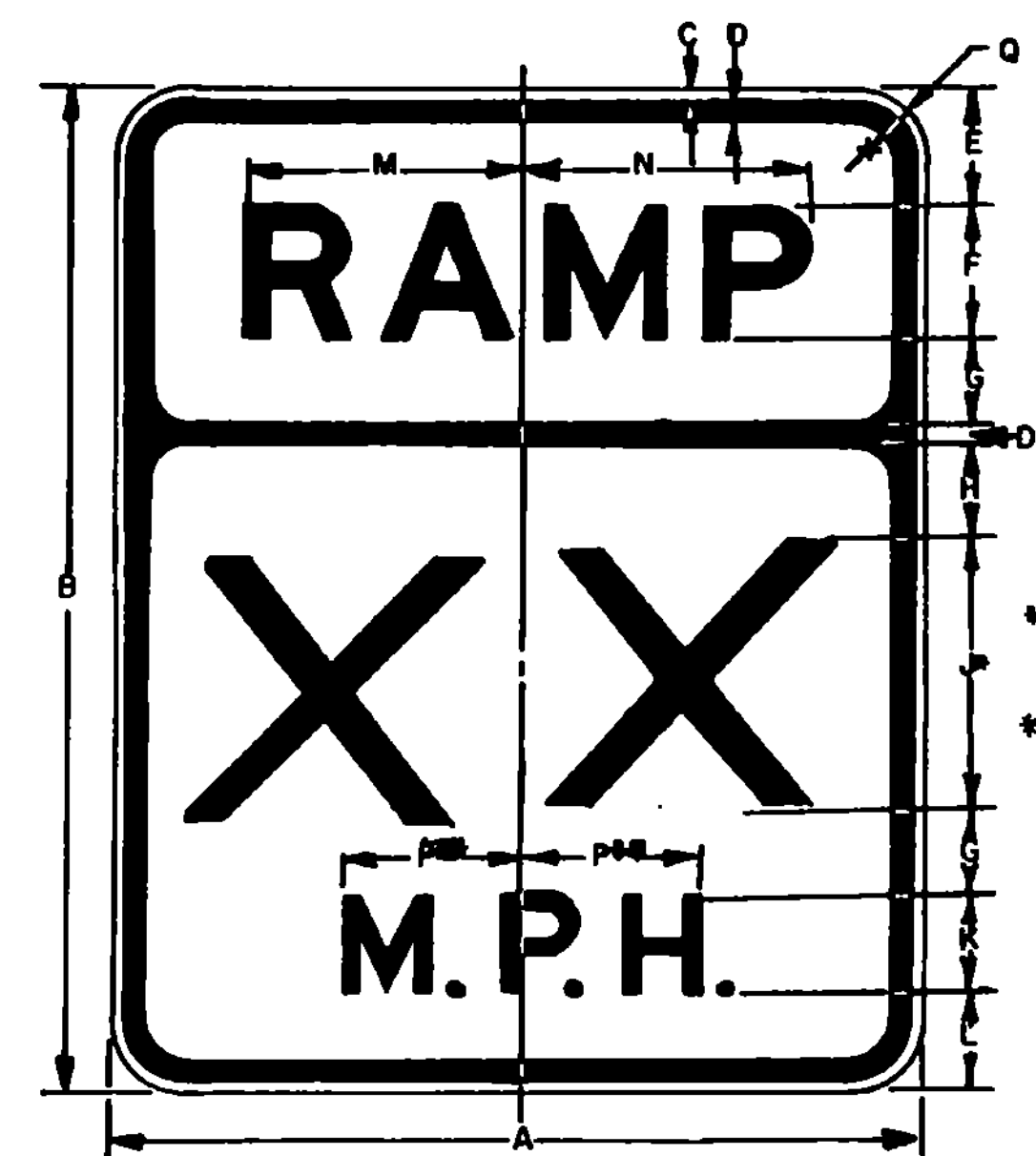


COLORS
LEGEND - BLACK (NON-REFL)
BACKGROUND - YELLOW (REFL)



COLORS
CHEVRON - BLACK (NON-REFL)
BACKGROUND - YELLOW (REFL)

SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
MIN.	12	18	6	9	1/2	1-1/2
STD.	18	24	9	12	3/4	1-1/2
SPECIAL	24	30	12	15	7/8	1-1/2
EXPWY.	30	36	15	18	1	1-7/8
FRWY.	36	48	18	24	1-1/8	2-1/4



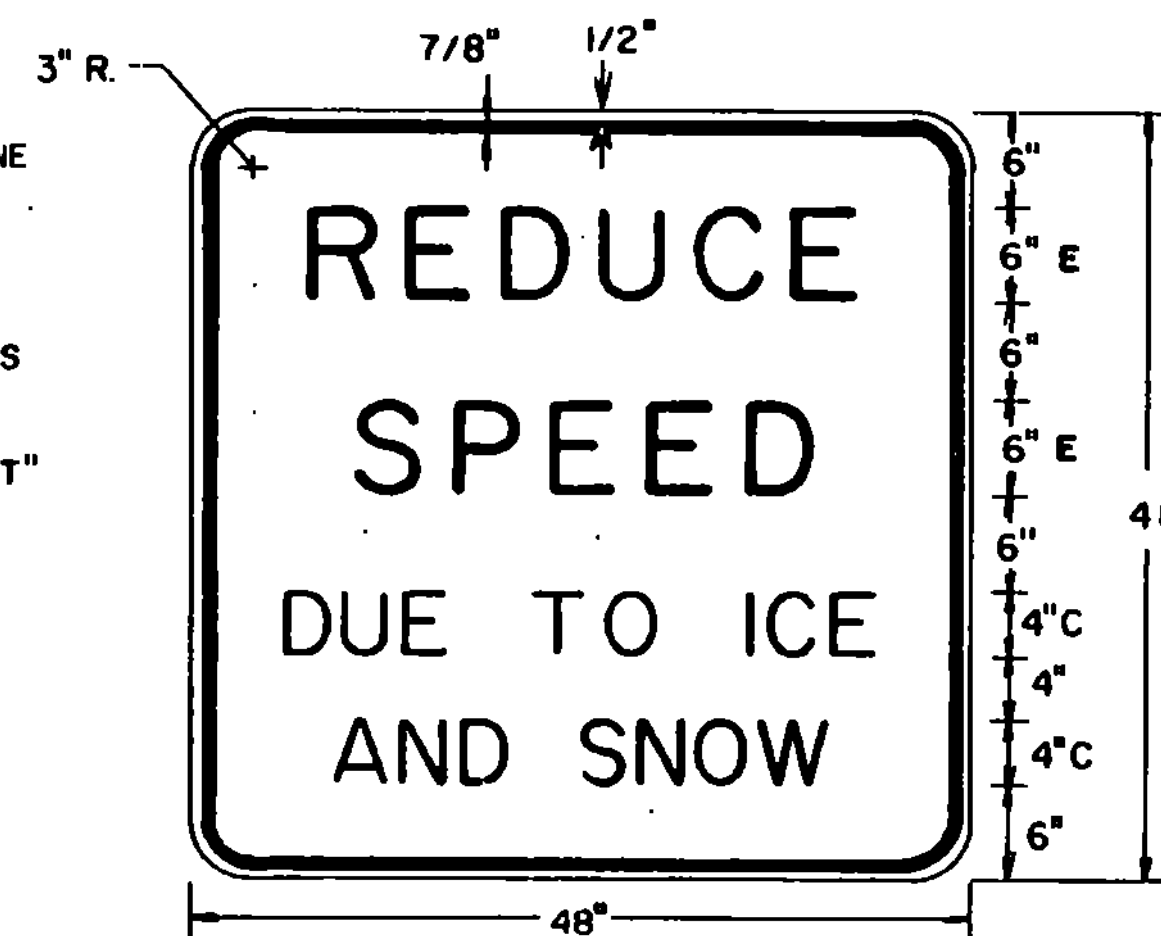
OR "EXIT"

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

THE "RAMP" SPEED SIGN IS USED ON RAMPS LEADING FROM ONE FREEWAY TO ANOTHER AND THE "EXIT" SPEED SIGN IS USED ON NORMAL EXITS.

COLORS
LEGEND - BLACK (NON-REFL)
BACKGROUND - YELLOW (REFL)

SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MIN. & STD.	24	30	3/8	5/8	3-1/2	4E	2-1/2	2-7/8	8E	3E	3	8-1/4	8-1/2	5-1/16
EXPWY.	36	48	5/8	7/8	6	6E	4	5-1/8	12E	4E	6	12-3/8	12-3/4	7-1/16
FRWY.	48	60	3/4	1-1/4	7	8E	5	6-3/4	16E	6E	8	16-1/2	17	10-5/16



COLORS
LEGEND - BLACK (NON-REFL.)
BACKGROUND - YELLOW (REFL.)

SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MIN.	24	3/8	5/8	10-1/4	8-3/4	3-1/2	2-3/8	4-3/16	22-1/4	1-1/2	6-3/8	2-5/8	10-3/8	22-3/16
STD.	30	1/2	3/4	13	11	4-3/8	3	5-1/4	28	1-7/8	8	3	13	27-3/4
EXPWY.	36	5/8	7/8	15-3/4	13-1/4	5-1/4	3-5/8	6-5/16	33-3/8	2-1/4	9-5/8	4	15-5/8	33-5/16
FRWY.	48	3/4	1-1/4	20-1/2	17-1/2	7	4-3/4	8-3/8	45	3	12-13/16	5-1/4	20-3/4	44-3/8

COLORS

THE WARNING SIGNS SHOWN ON THIS SHEET SHALL BE AS DETAILED FOR EACH SIGN. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

MATERIALS

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

	12" X 18"	18" X 24"	24" X 24"	24" X 30"	30" X 30"	36" X 36"	36" X 48"	48" X 48"	48" X 60"
FLAT SHEET ALUMINUM	0.060"	0.060"	0.080"	0.100"	0.100"	0.100"	0.100"	0.125"	0.125"
HIGH DENSITY OVERLAP PLYWOOD	1/2"	1/2"	1/2"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	18 GAGE	16 GAGE	14 GAGE	14 GAGE	14 GAGE	14 GAGE	12 GAGE	12 GAGE

THE REFLECTIVE MATERIAL SHALL BE 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. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

SPECIFICATIONS

WARNING SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

TEXT DESIGN

LETTERS, DIGITS, ARROW, SPACINGS AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

REVISIONS AND CORRECTIONS

APRIL 18, 1985 - RAMP AND EXIT SIGN USE NOTE ADDED.
"REDUCE SPEED DUE TO ICE AND SNOW" SIGN ADDED.
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED

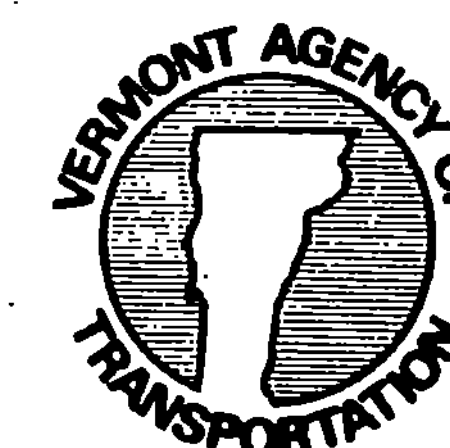
DATE OCT. 3, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

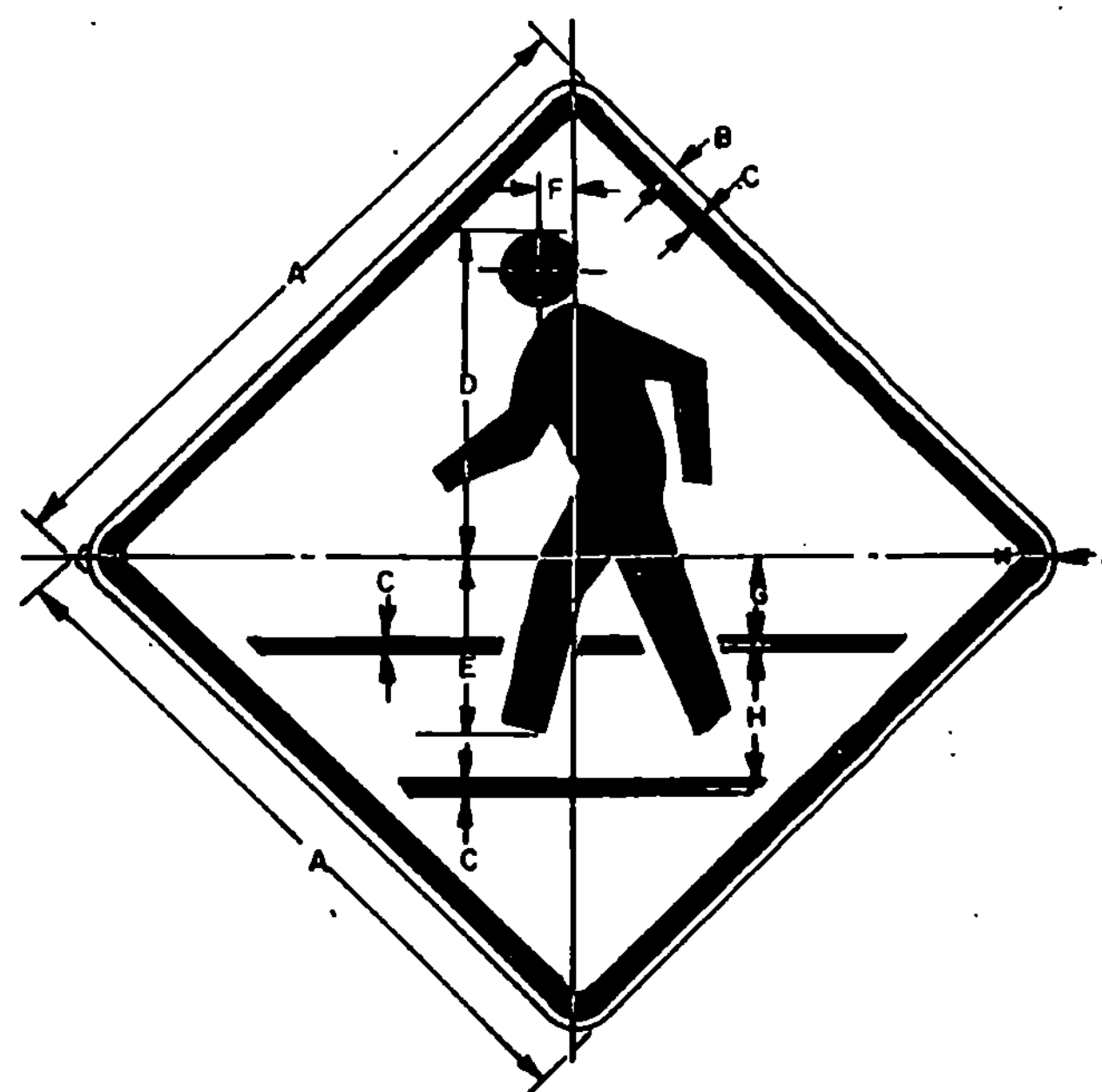
SURVEY AND PLANS ENGINEER

WARNING SIGNS

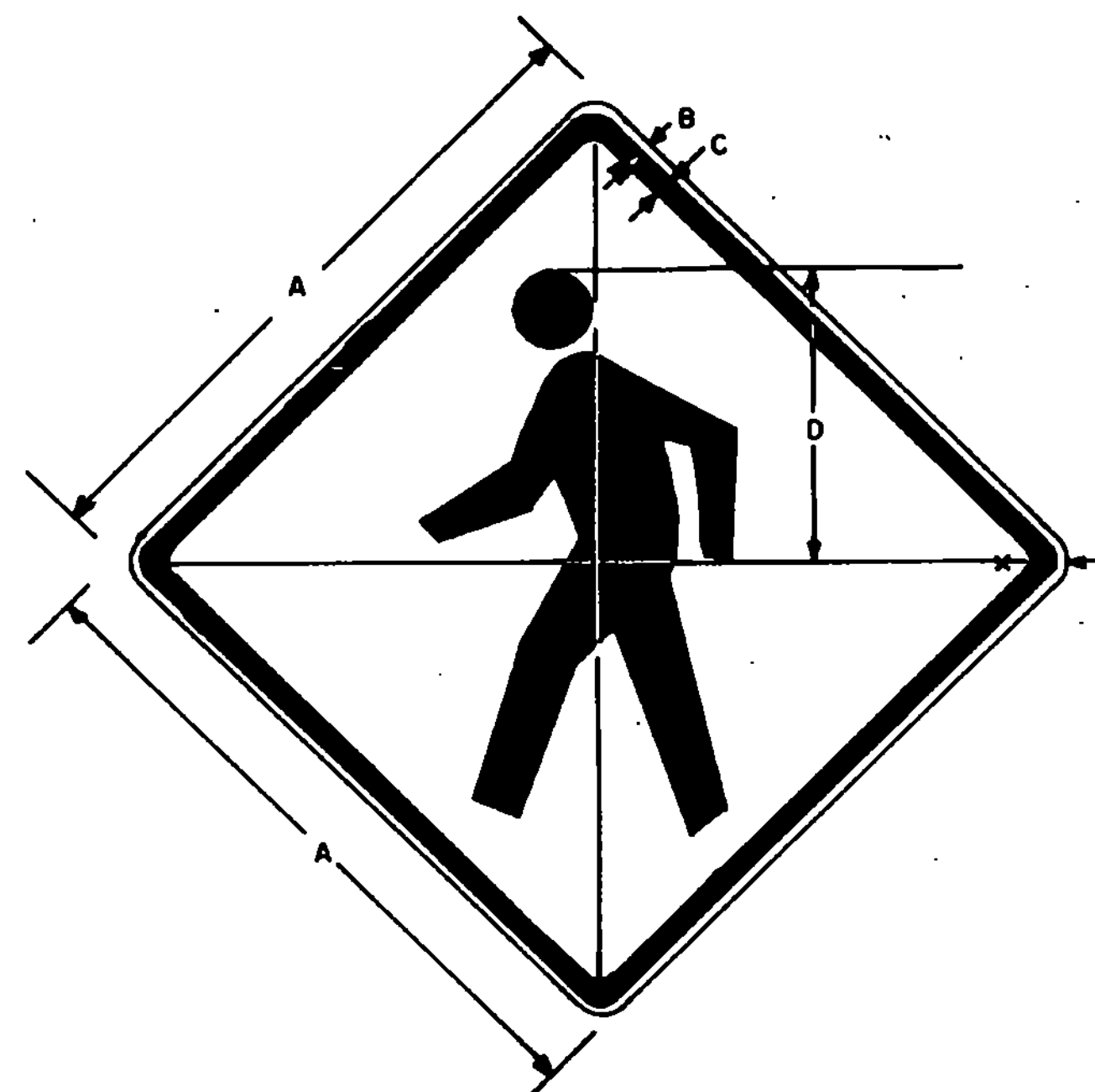


STANDARD

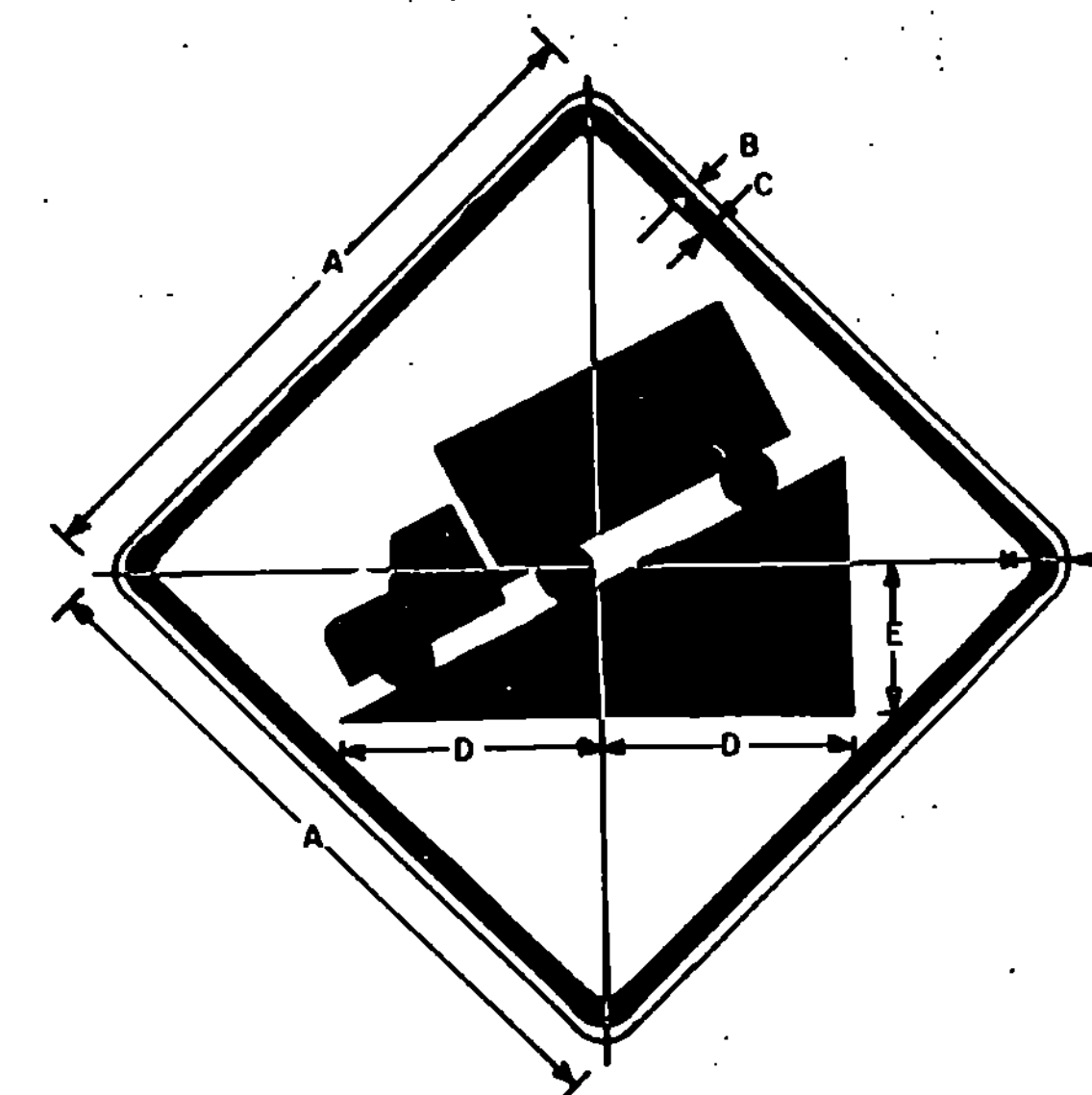
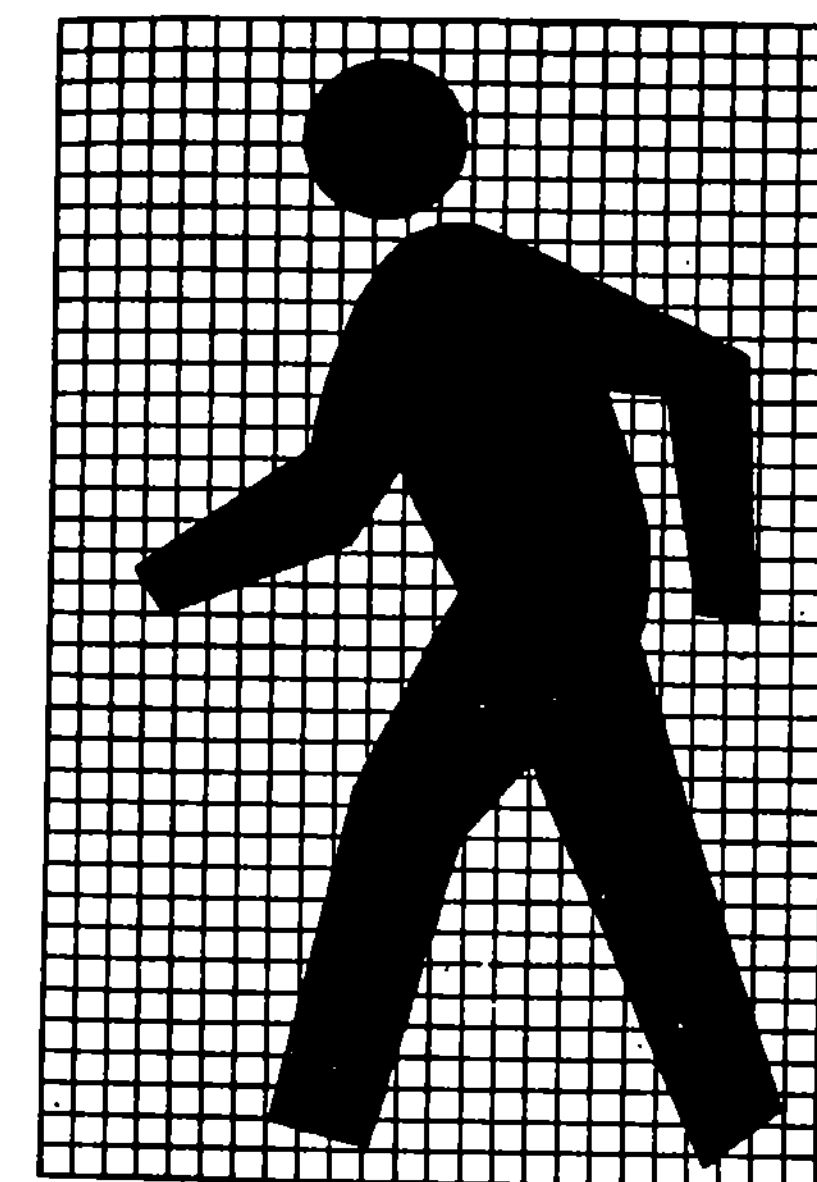
E-19



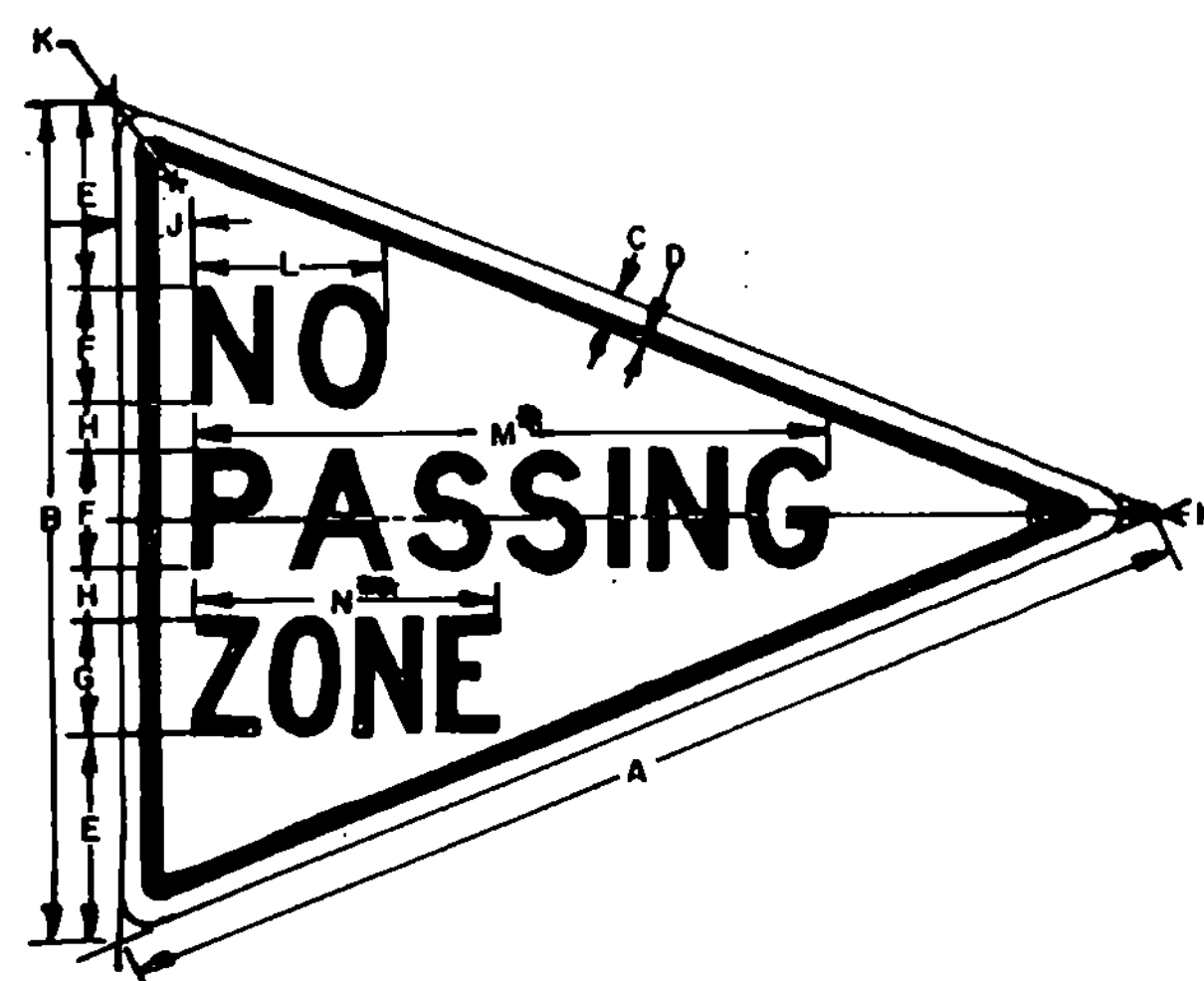
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J		
BIKE	18	3/8	5/8	8-3/8	4-3/4	3/4	2-3/8	3-5/8	1-1/2		
MIN.	24	3/8	5/8	11	6-3/8	1-3/16	3-1/8	4-3/4	1-1/2		
STD.	30	1/2	3/4	14	8	1-1/2	4	6	1-7/8		
EXPWY.	36	5/8	7/8	16-3/4	9-5/8	1-13/16	4-3/4	7-1/4	2-1/4		
SPECIAL	48	3/4	1-1/4	22	12-3/4	2-3/8	6-1/4	9-1/2	3		



SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN.	24	3/8	5/8	11	1-1/2
STD.	30	1/2	3/4	13-1/2	7/8
EXPWY.	36	5/8	7/8	16	2-1/4
SPECIAL	48	3/4	1-1/4	22	3

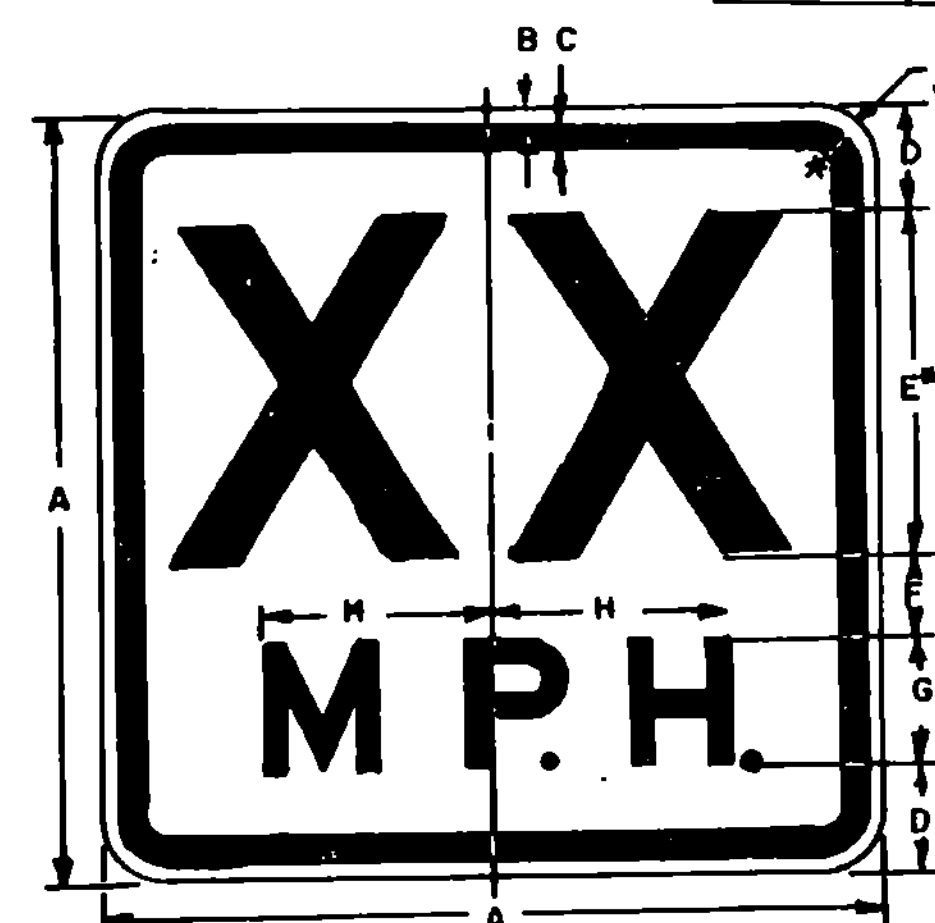


SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
MIN.	24	3/8	5/8	8-3/4	6	1-1/2
STD.	30	1/2	3/4	11	7-1/2	1-7/8
EXPWY.	36	5/8	7/8	13-1/4	9	2-1/4
FWY	48	3/4	1-1/4	17-1/2	12	3



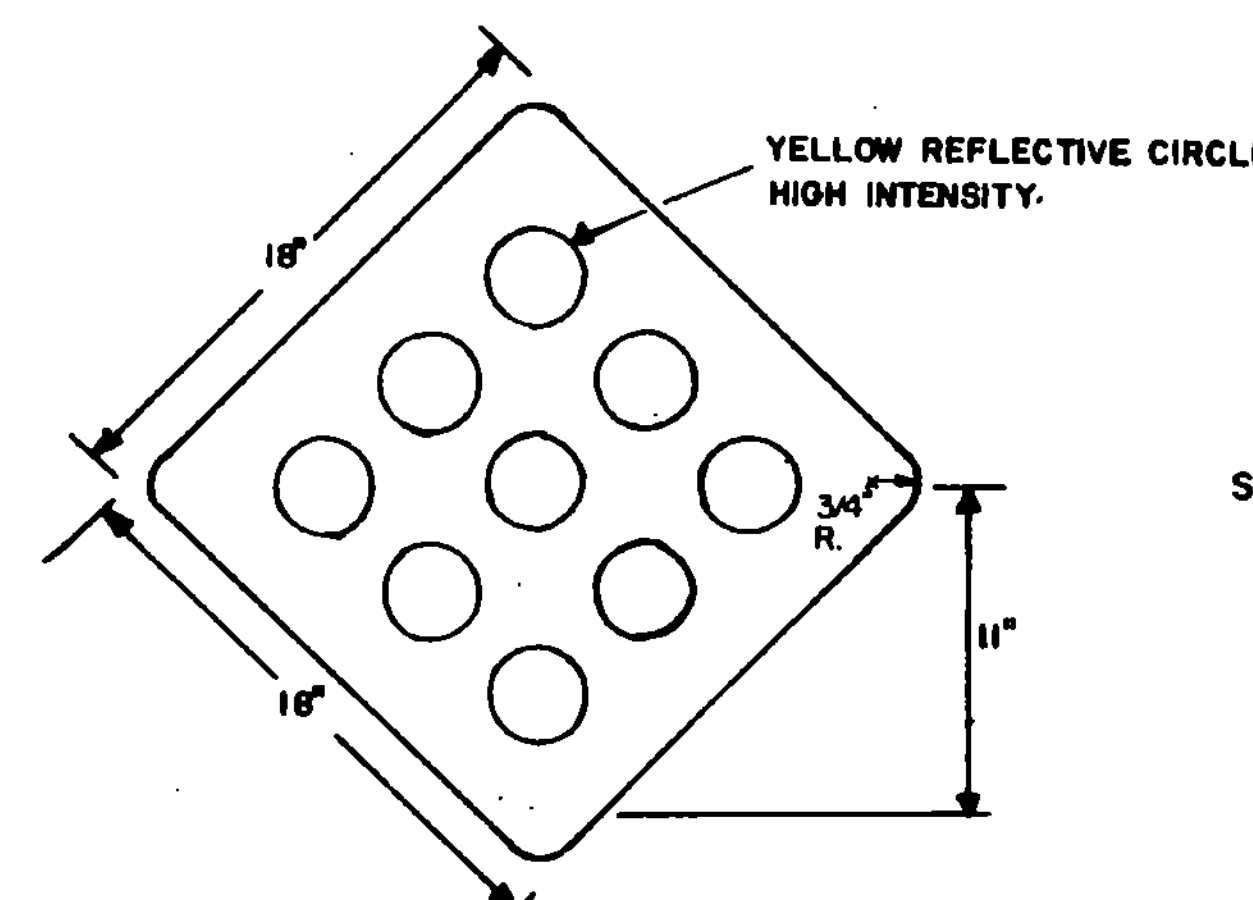
SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
MIN.	40	30	1/2	3/4	7-1/4	40	4C	1-3/4	2-1/2	1-7/8	6-1/2	22-9/16	11-1/16	
STD.	48	36	5/8	7/8	8-1/2	50	5C	2	3	2-1/4	8	26-13/16	12-3/4	
SPECIAL	64	48	3/4	1-1/4	12	6D	6C	3	4	3	10-3/4	33-11/16	16-9/16	

* FOR STD. SIZE REDUCE SPACING 20%
 ** FOR STD. SIZE REDUCE SPACING 35%

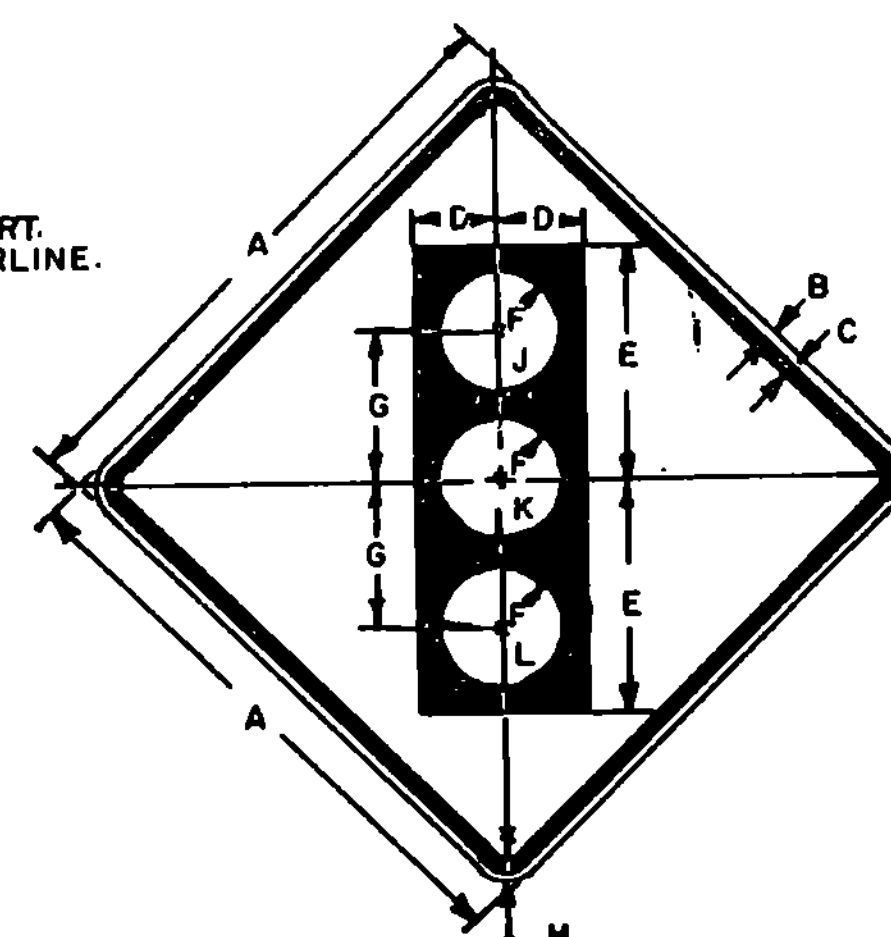


SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
STD.	18	3/8	5/8	2-1/2	8E	2	3E	5-5/16	1-1/2	
SPECIAL	24	3/8	3/8	3-5/8	10E	2-3/4	4E	7-1/16	1-1/2	

** OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.



HAZARD MARKER:
 HAZARD MARKERS SHALL BE OF 0060 FLAT SHEET ALUMINUM OR 18 GAGE GALVANIZED FLAT SHEET STEEL WITH A NON-REFLECTIVE YELLOW BACKGROUND AND NINE 5" DIA. CIRCLES EVENLY SPACED WITH MATERIALS AS NOTED ABOVE.



SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
BIKE	18	3/8	5/8	3	8	2-1/4	5	1-1/2
MIN.	30	1/2	3/4	5	13-3/4	3-3/4	8-3/4	7/8
STD. & MIN.	36	5/8	7/8	5-3/4	15-3/4	4-1/4	10	2-1/4
SPECIAL	48	3/4	1-1/4	7-1/2	20	5	2-1/2	3

ADDITIONAL COLORS:
 J - REFL. RED
 K - REFL. YELLOW
 L - REFL. GREEN

COLORS
 THE WARNING SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT AND SYMBOLS ON REFLECTORIZED YELLOW BACKGROUND. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

MATERIALS
 THE SIGN BASE MATERIALS USED FOR THE WARNING SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING, OF THE MINIMUM THICKNESS NOTED.

	18" X 18"	24" X 24"	30" X 30"	36" X 36"	48" X 48"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"	
HIGH DENSITY OVERLAD PLYWOOD	1/2"	1/2"	5/8"	5/8"	
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE	12 GAGE	

THE REFLECTIVE MATERIAL SHALL BE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN.

THE TEXT OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

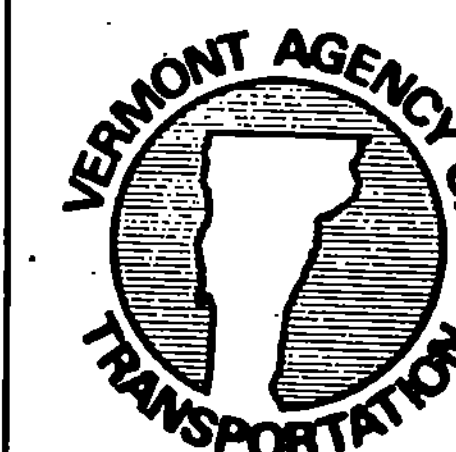
TEXT DESIGN
 LETTERS, DIGITS, SYMBOLS, SPACINGS, AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

SPECIFICATIONS
 WARNING SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

REVISIONS AND CORRECTIONS
 FEB. 19, 1985 - COLORS ADDED TO "SIGNAL AHEAD" SYMBOL
 - OTHER MINOR REVISIONS
 FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED
 DATE OCT 3, 1984
 DIRECTOR OF ENGINEERING AND CONSTRUCTION
 CHIEF OF DESIGN
 SURVEY AND PLANS ENGINEER

WARNING SIGNS

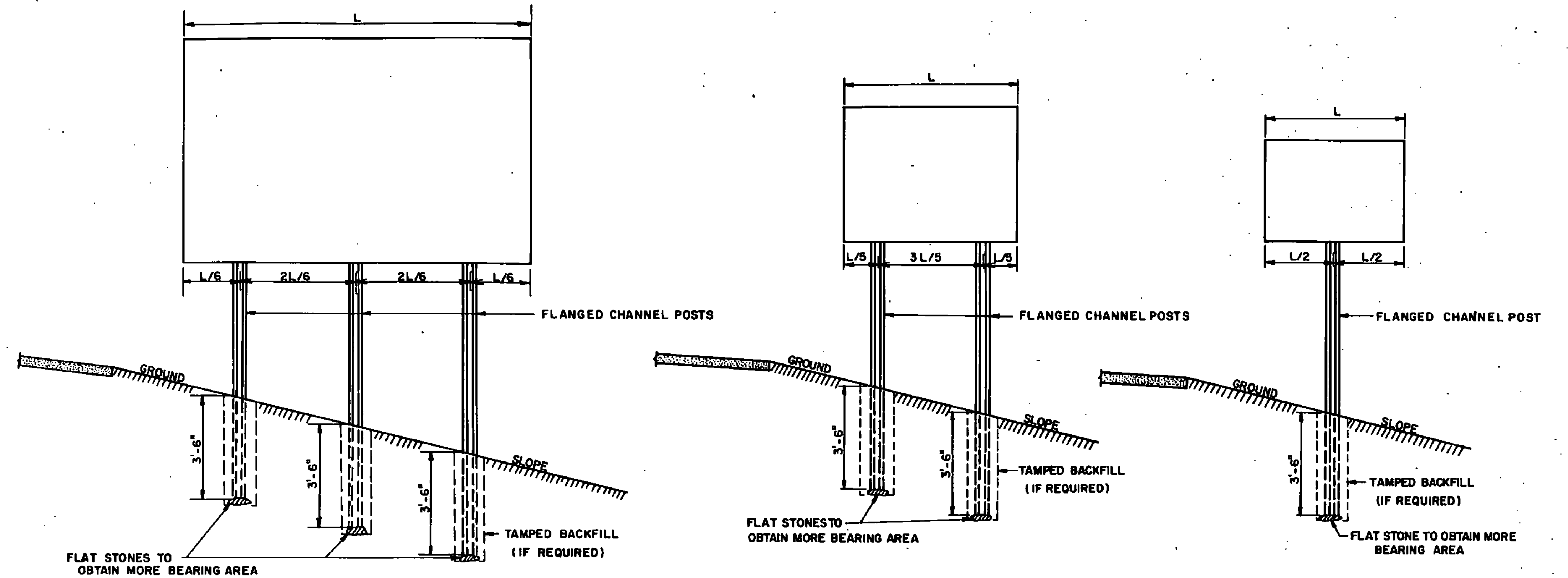


STANDARD
 E-19B

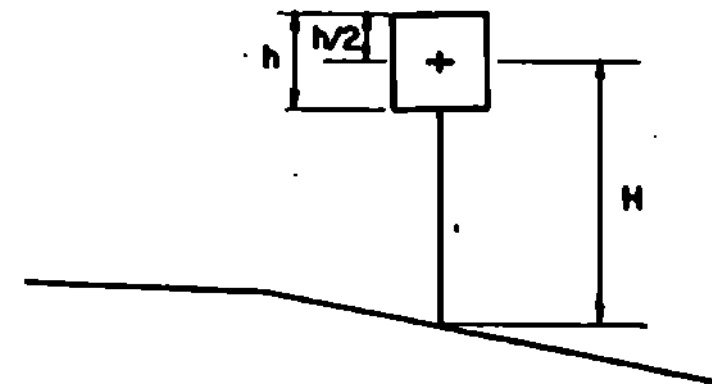
GENERAL NOTES

ALL MATERIAL SHALL BE AS SPECIFIED UNDER SECTION 675 - 679 - TRAFFIC SIGNS

CONSTRUCTION METHODS - POSTS MAY BE DRIVEN OR SET IN A DUG HOLE AND BACKFILLED. IF DRIVEN, A DRIVING CAP SHALL BE USED. IF SET IN A DUG HOLE, THE EXCAVATION AND BACKFILL WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED AS BEING INCLUDED IN UNIT PRICES FOR OTHER ITEMS IN THE CONTRACT. THE DUG HOLE INSTALLATION SHALL BE USED IN AREAS OF POOR SOIL CONDITIONS OR AS DIRECTED BY THE ENGINEER.



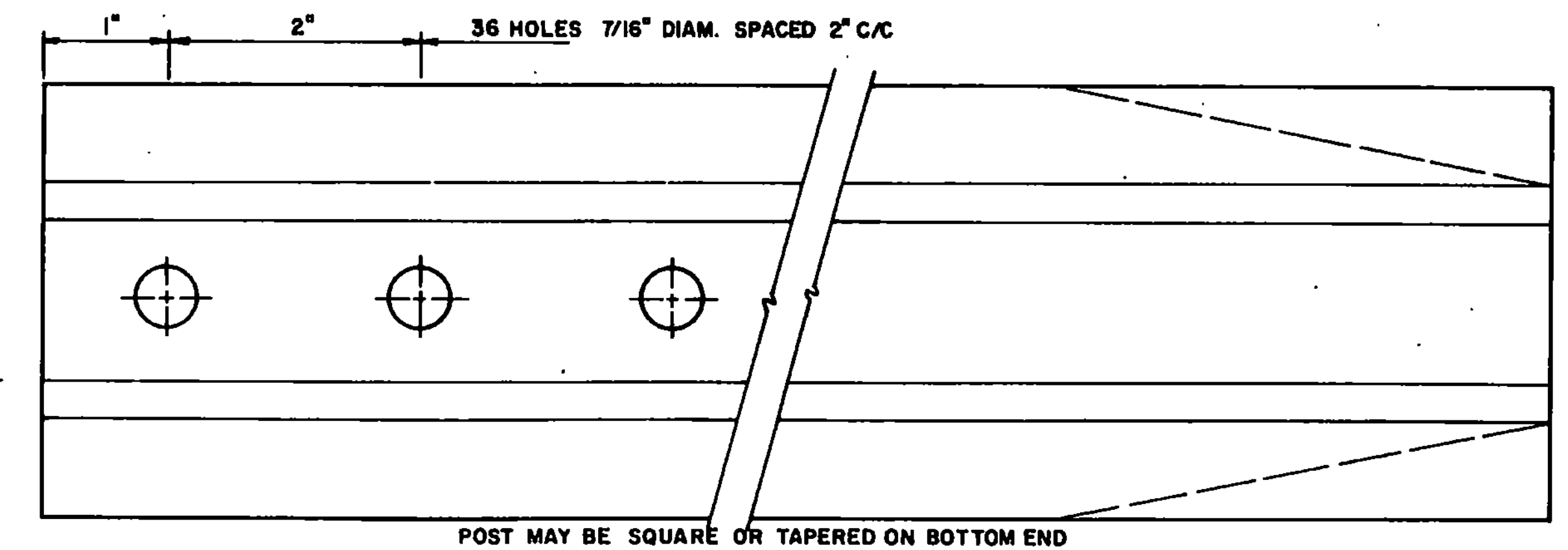
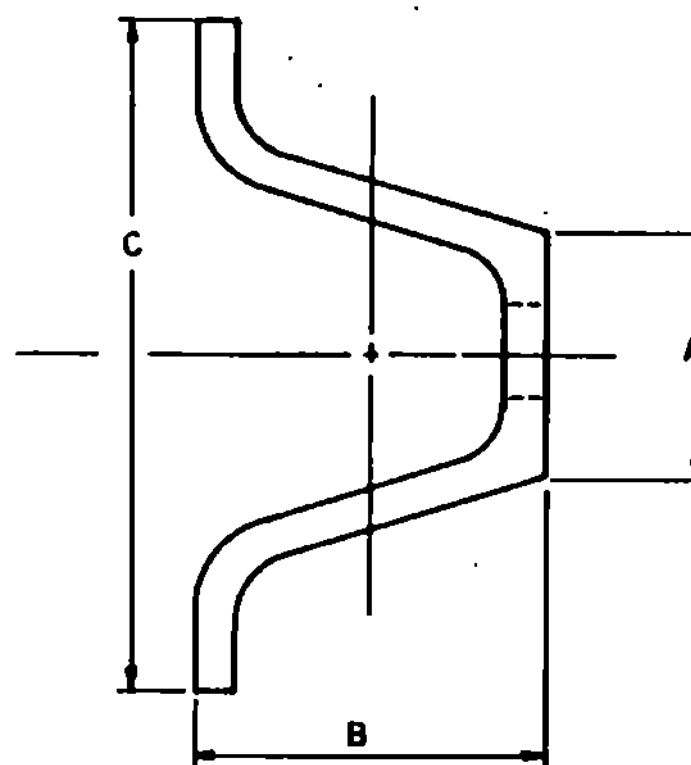
IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED STEEL POSTS WILL BE SET AND GROUTED 12" DEEP IN THE LEDGE.



POST SELECTION CHART		
SIGN AREA	(FT ²) x H (FT)	Sv (SELECTION VALUE)
POST SIZE	Sv	DESIGN CRITERIA
2 LB/FT.	62	WIND SPEED = 60 MPH (10-YEAR MEAN RECURRENCE INTERVAL) WIND PRESSURE = 12 PSF STEEL MIN YIELD Fy = 50,000 PSI ALLOWABLE STRESS = (1/4) 0.55 Fy
2 1/2 LB/FT.	77	
3 LB/FT.	107	

POST SIZE POUNDS PER LINEAR FOOT	DIMENSIONS			PLASTIC SECTION MODULUS, Z
	A	B	C	
2	1 9/32"	1 31/64"	3 1/16"	0.26 IN. ³
2 1/2	1 9/32"	1 35/64"	3 1/16"	0.40 IN. ³
3	1 5/16"	1 7/8"	3 1/2"	0.53 IN. ³

SIMILAR DIMENSIONS ARE ACCEPTABLE, HOWEVER PLASTIC SECTION MODULUS VALUES MUST NOT BE EXCEEDED.

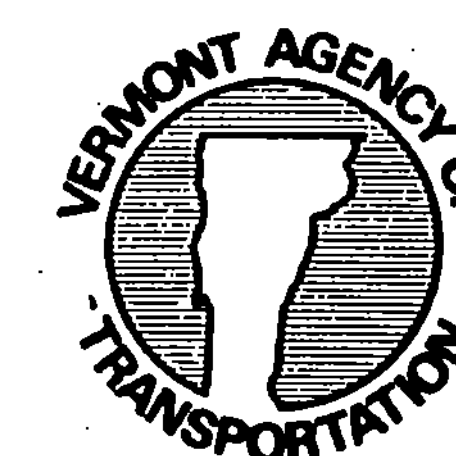


REVISIONS AND CORRECTIONS
FEB. 8, 1978 - HEIGHT OF SIGNS ADDED.
DEC. 15, 1978 - RAIL STEEL DELETED
JAN. 8, 1981 - ADDED POST SIZE & SELECTION CHARTS;
REVISED NOTES & DIMENSIONS
FEB. 3, 1986 - UPDATED TO 1986
SPECIFICATIONS

APPROVED

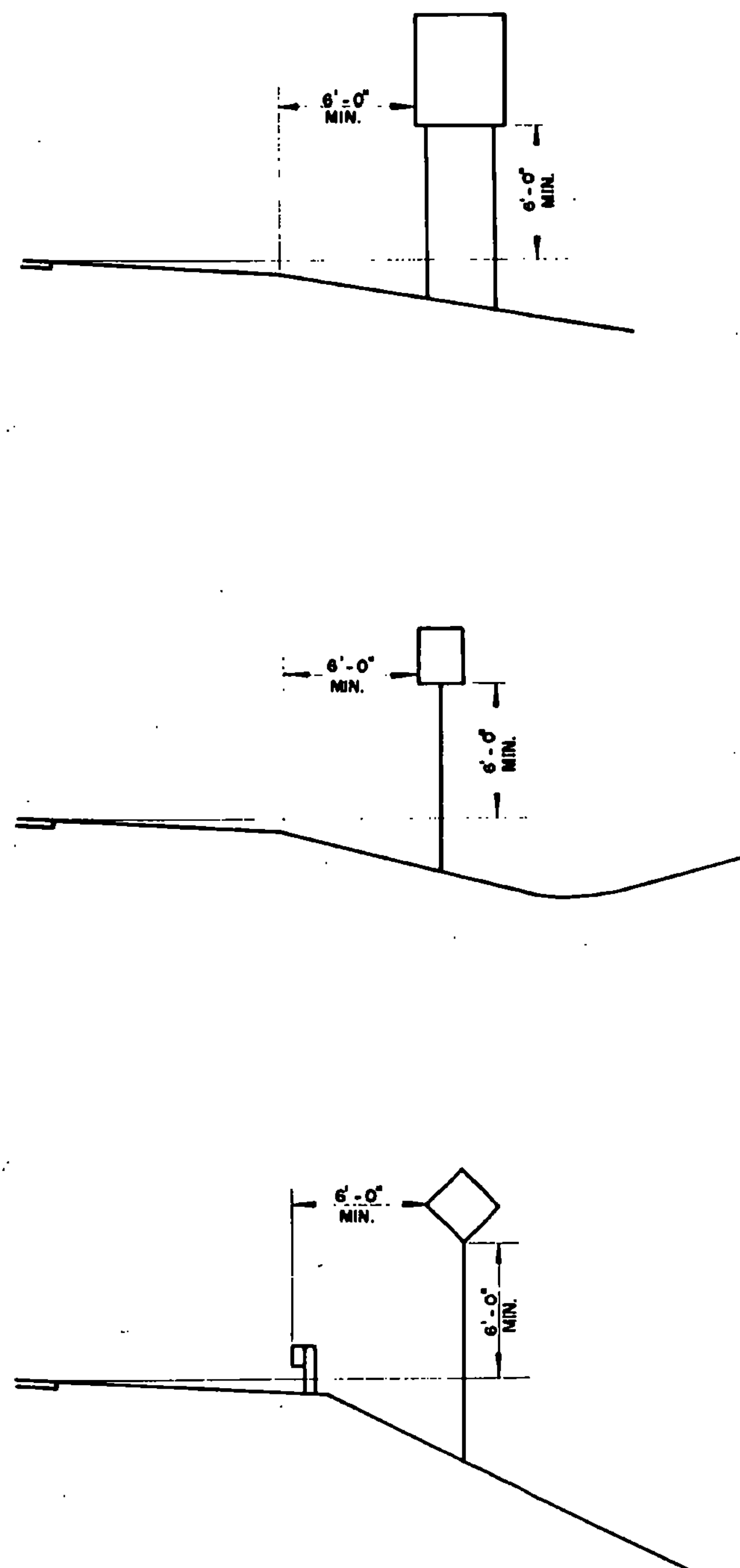
Nov 24, 1976
C. H. Stickney
CHIEF ENGINEER
R. O. Munn
ASST. CHIEF ENGINEER
D. C. Jones
HIGHWAY ENGINEER

FLANGED CHANNEL STEEL SIGN SUPPORTS

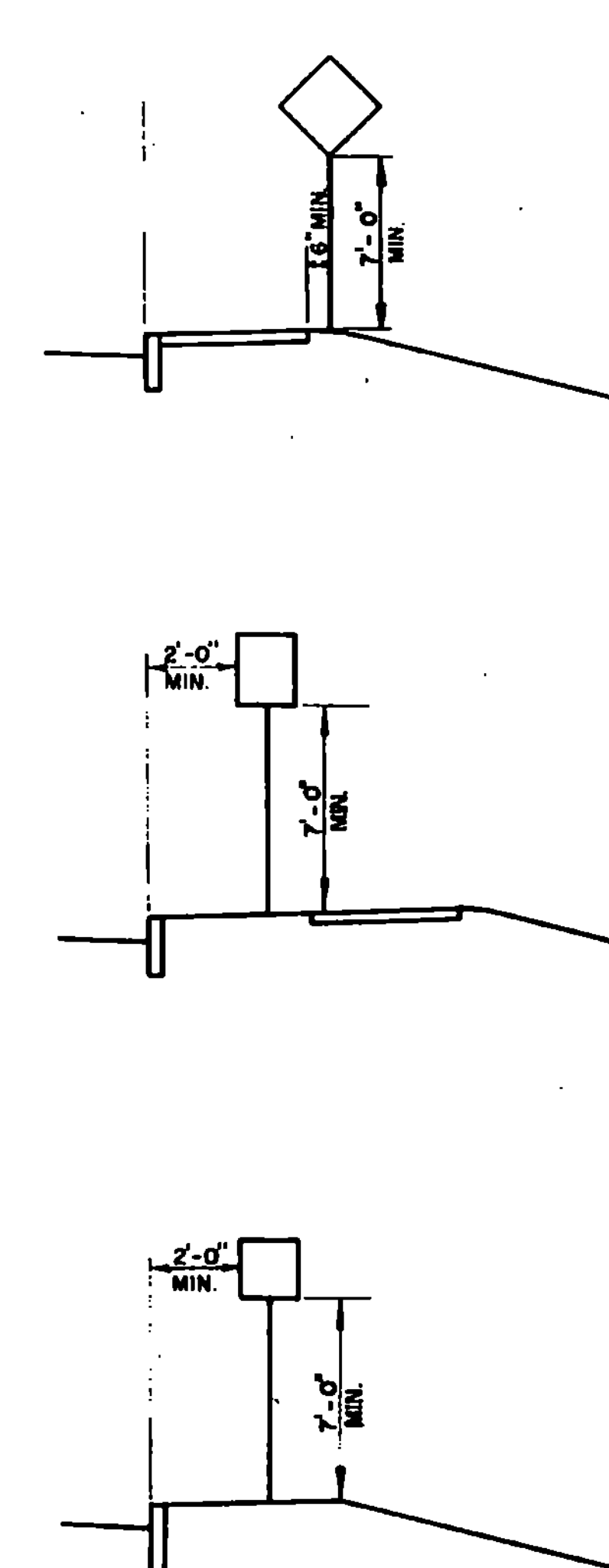


STANDARD
E 24-A

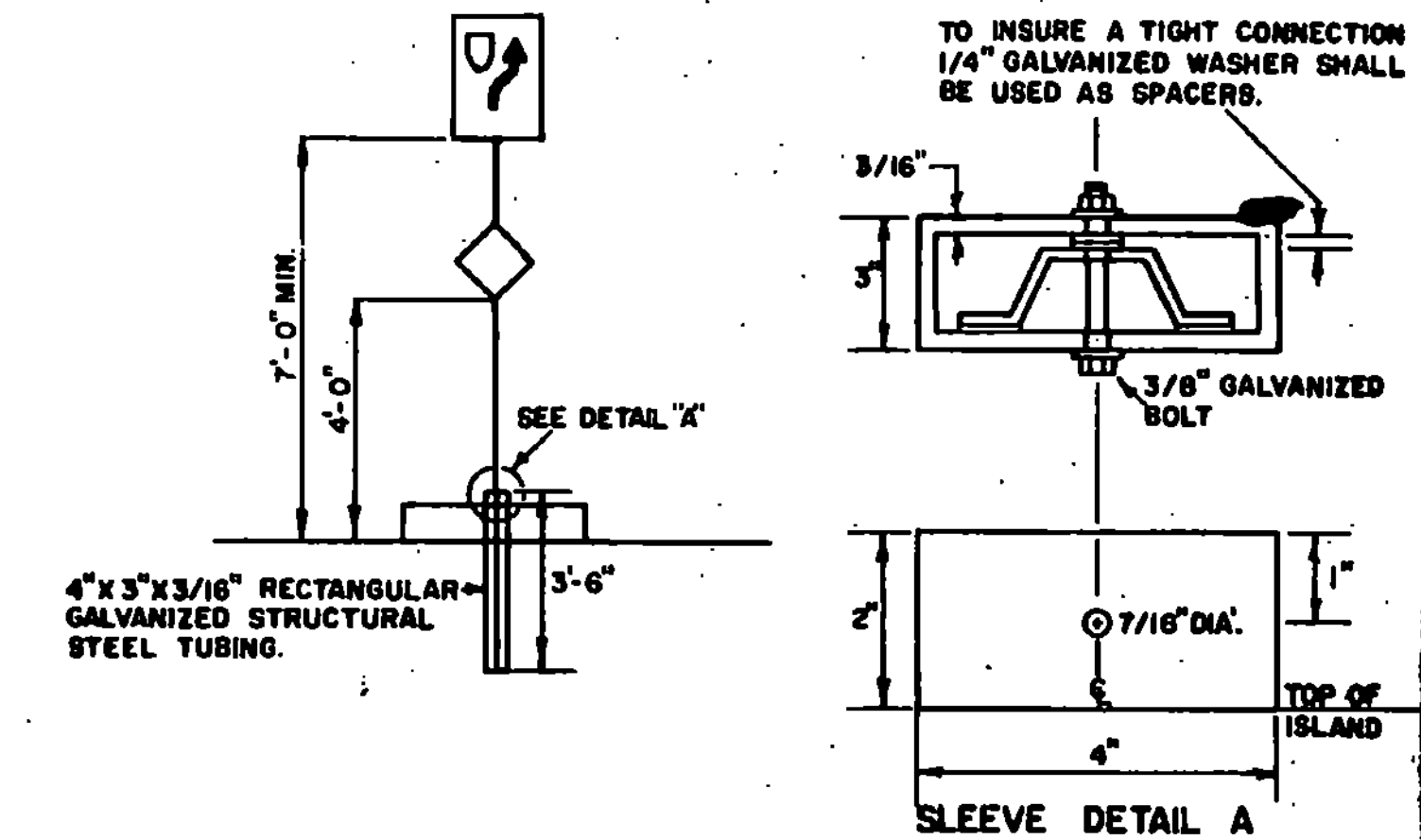
RURAL



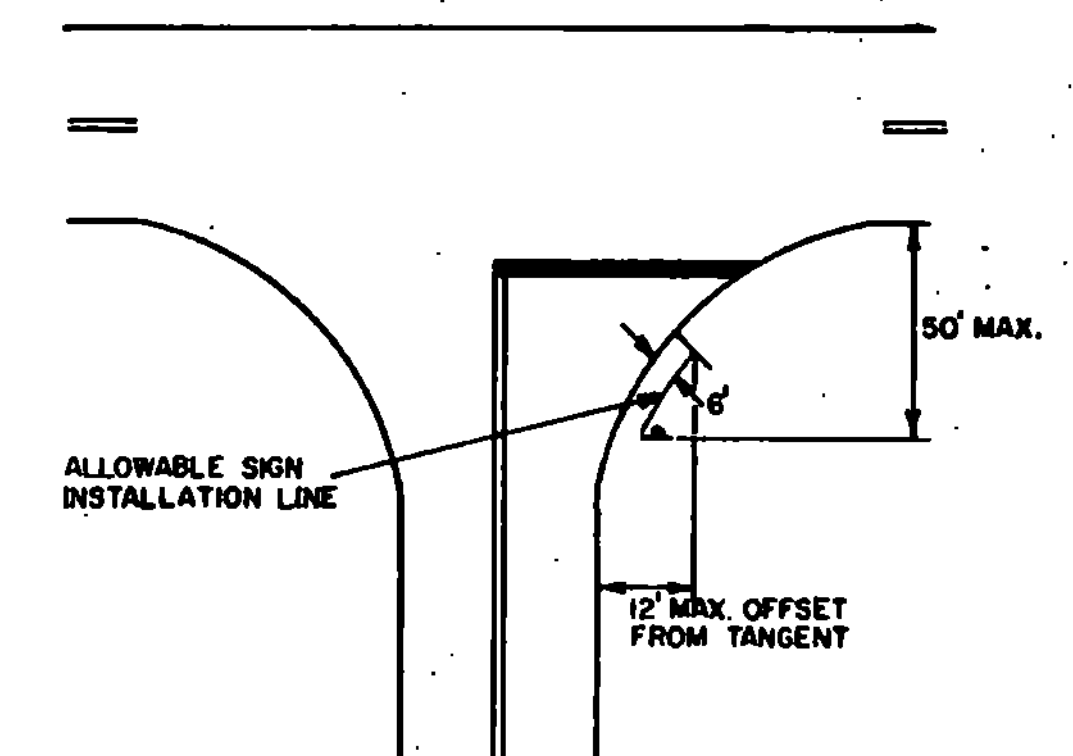
URBAN



WARNING SIGNS ON ISLAND IN THE LINE OF TRAFFIC



STOP OR YIELD SIGNS AT WIDE THROAT INTERSECTIONS



NOTES 1) IN BOTH RURAL AND URBAN LOCATIONS, IF A SECONDARY SIGN IS MOUNTED BELOW ANOTHER SIGN, THE MINIMUM CLEARANCE MAY BE REDUCED BY ONE FOOT.
2) IN RURAL AREAS WITH NO SHOULDER, THE MINIMUM LATERAL CLEARANCE SHOULD BE 12' FROM EDGE OF THE TRAVELED WAY.

REVISIONS AND CORRECTIONS
JAN. 23, 1978 - DIMENSION FROM SHOULDER TO SIGN CHANGED PER FHWA.
AUG. 25, 1981 - ADDED STOP AND ISLAND DETAILS, REVISED CURB OFFSET
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED
Dec. 29, 1971

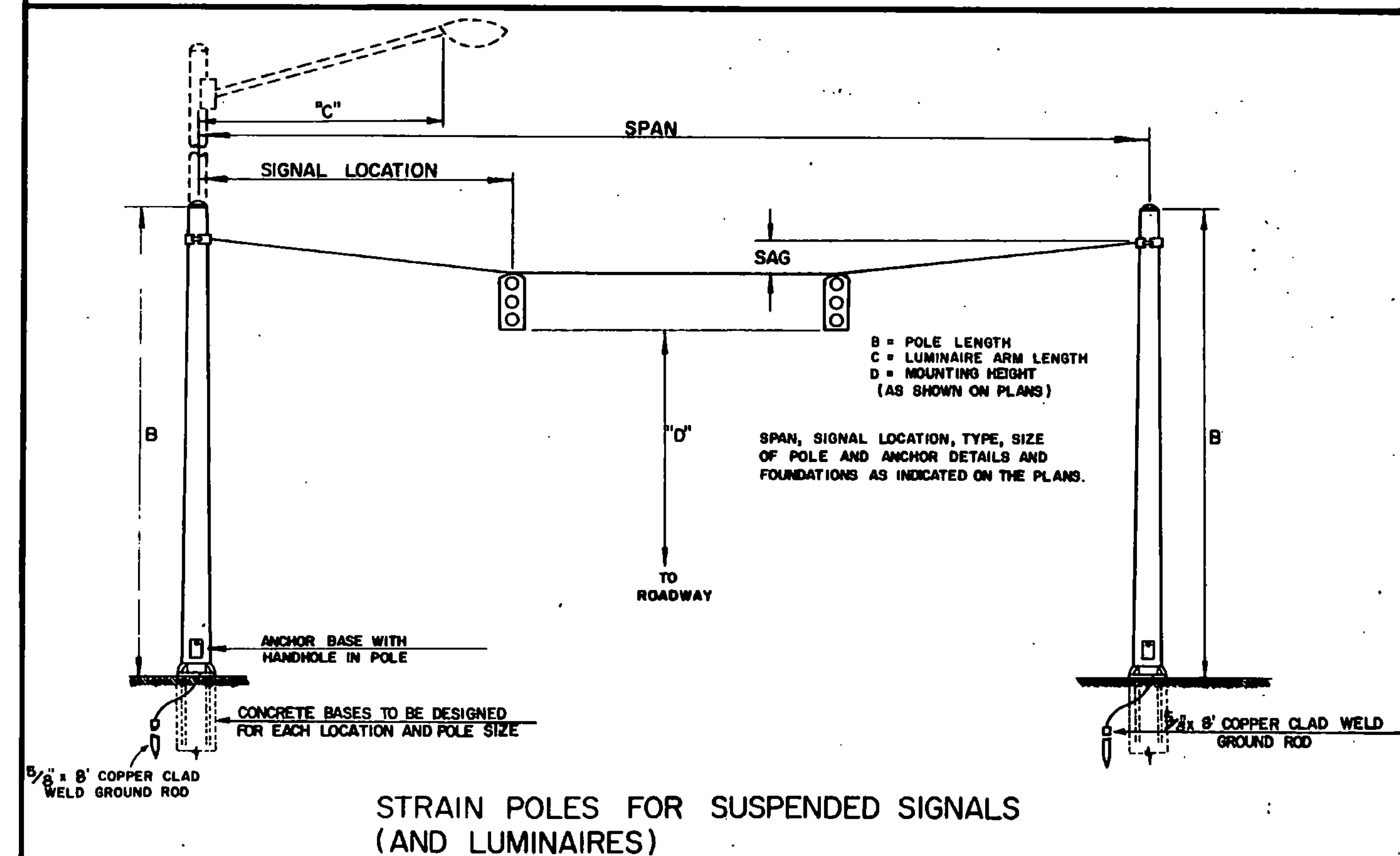
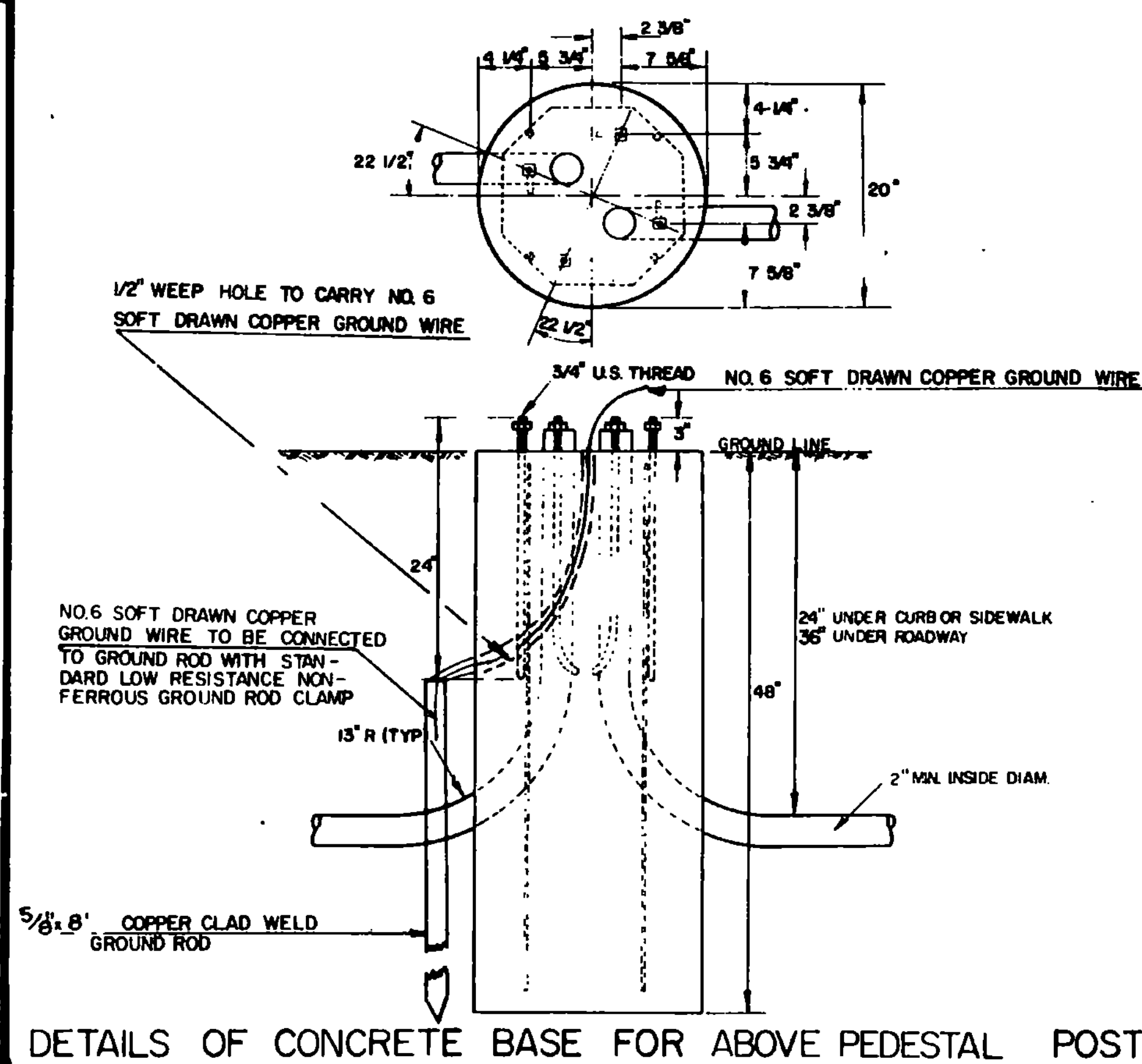
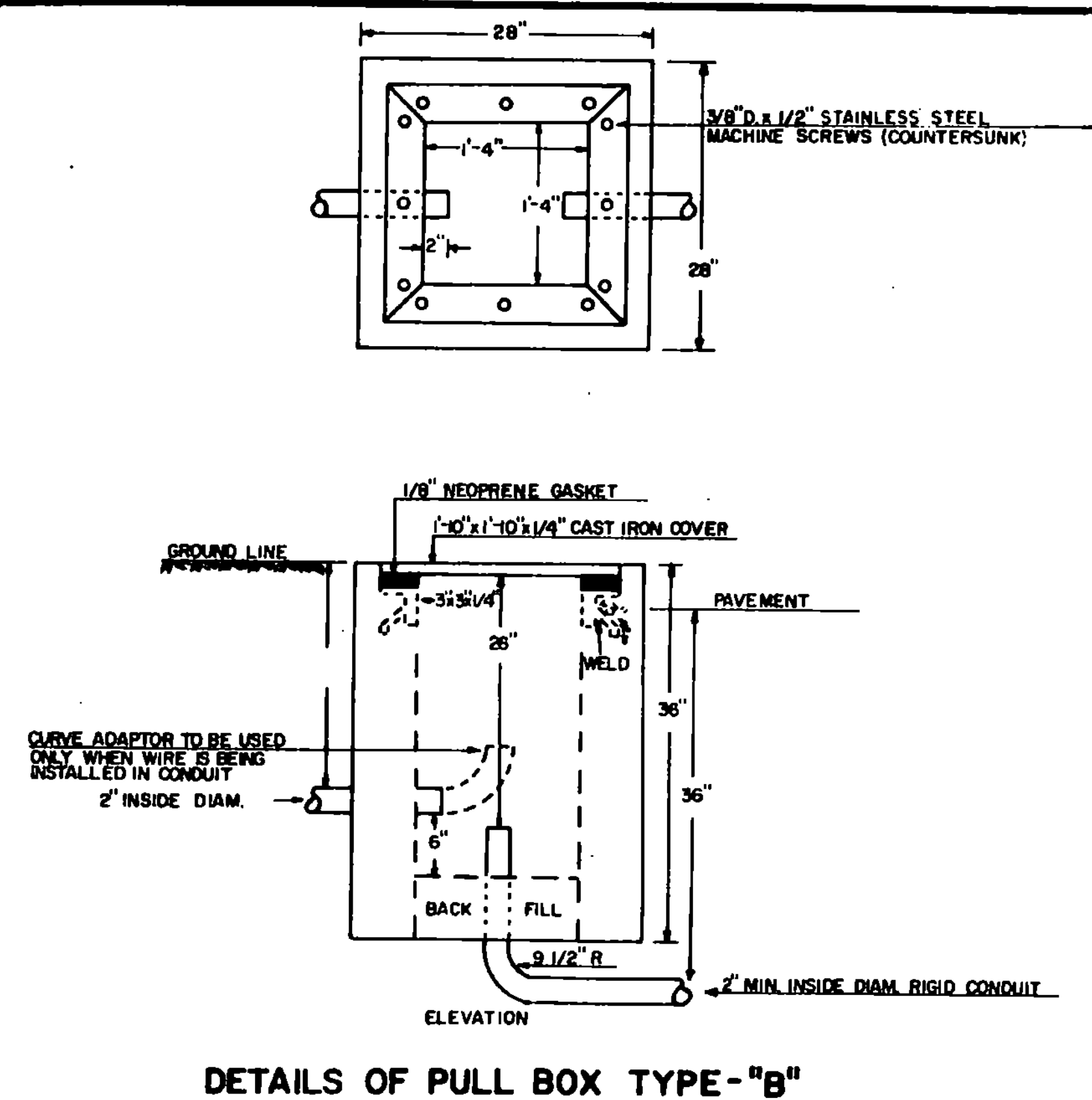
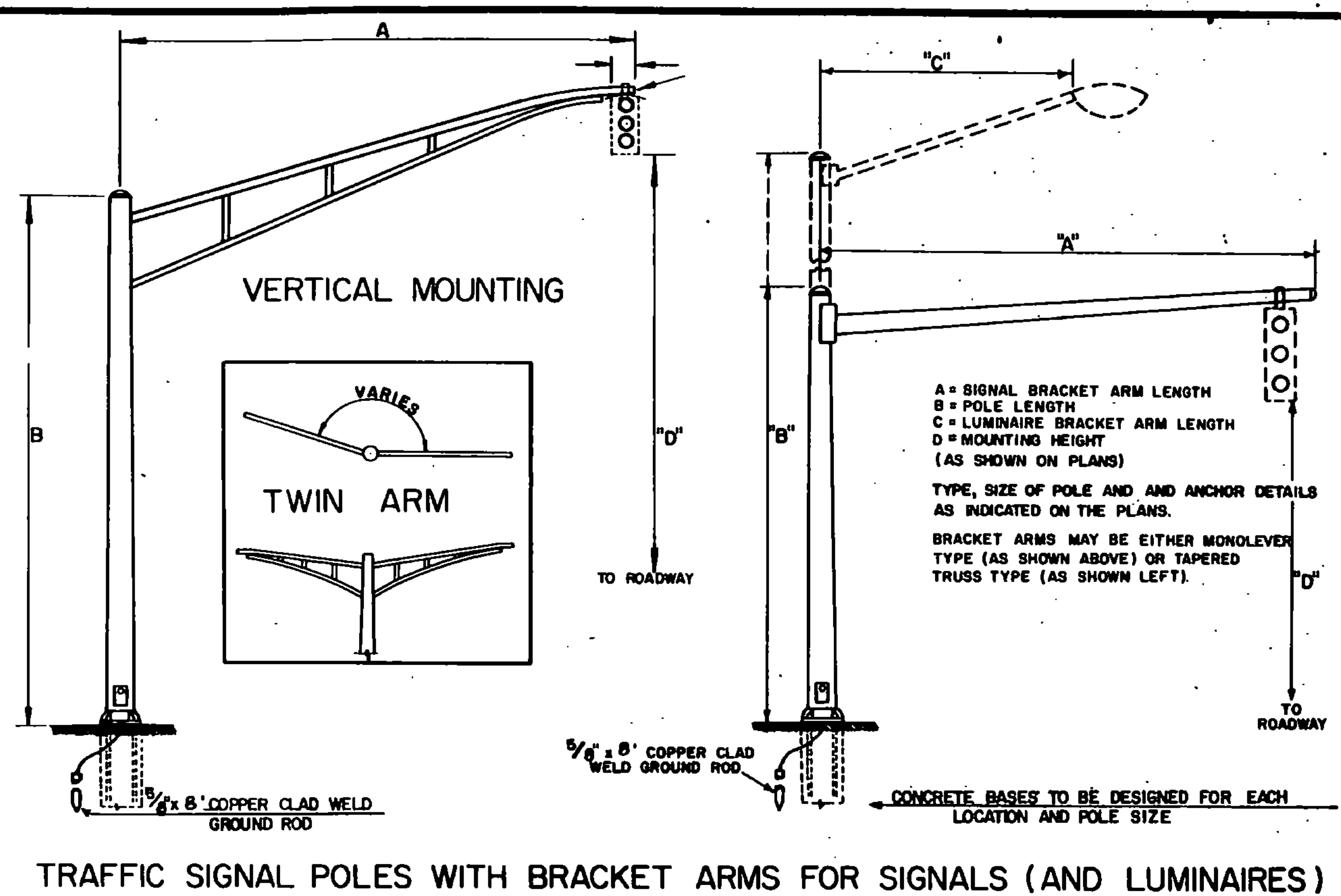
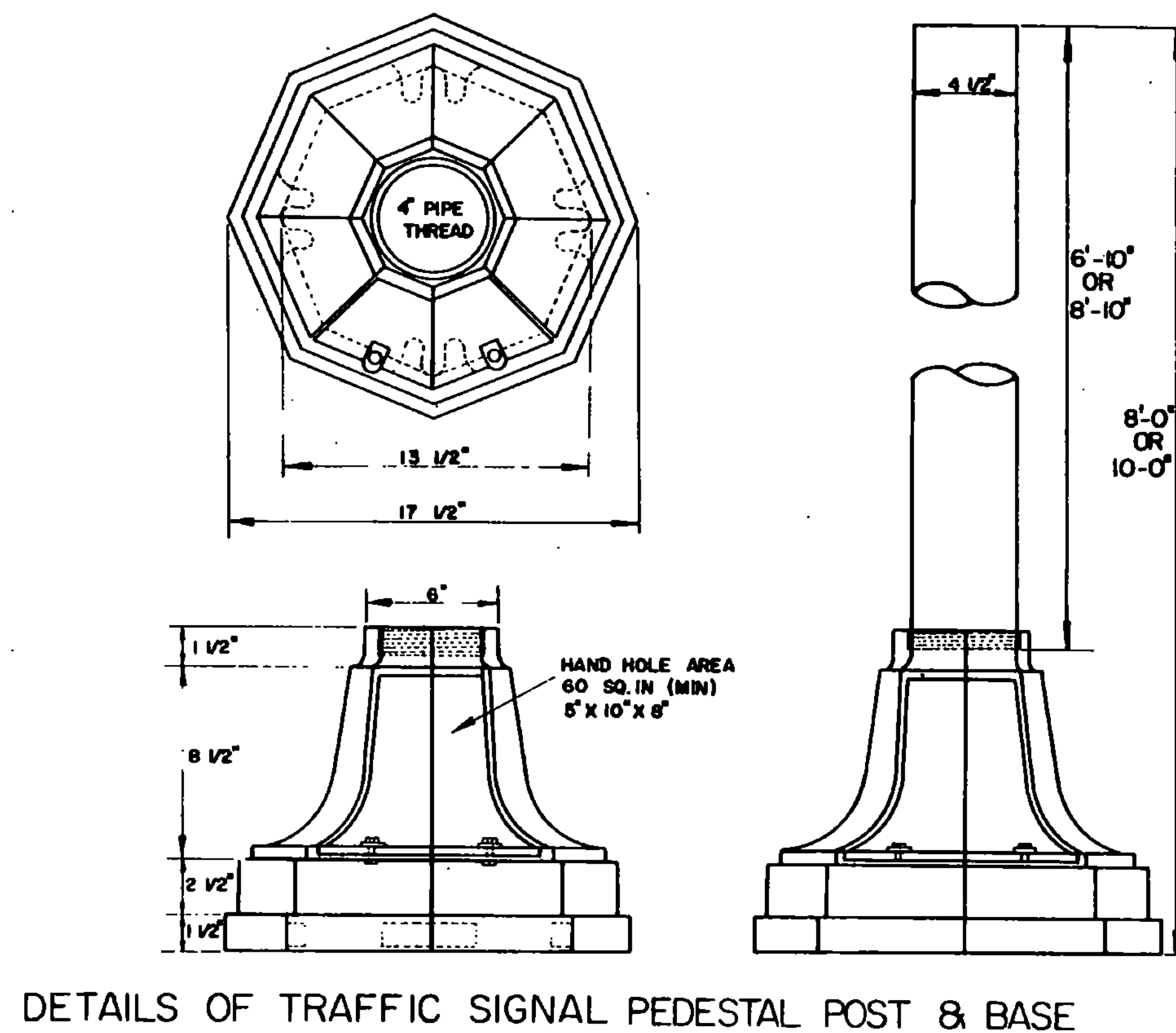
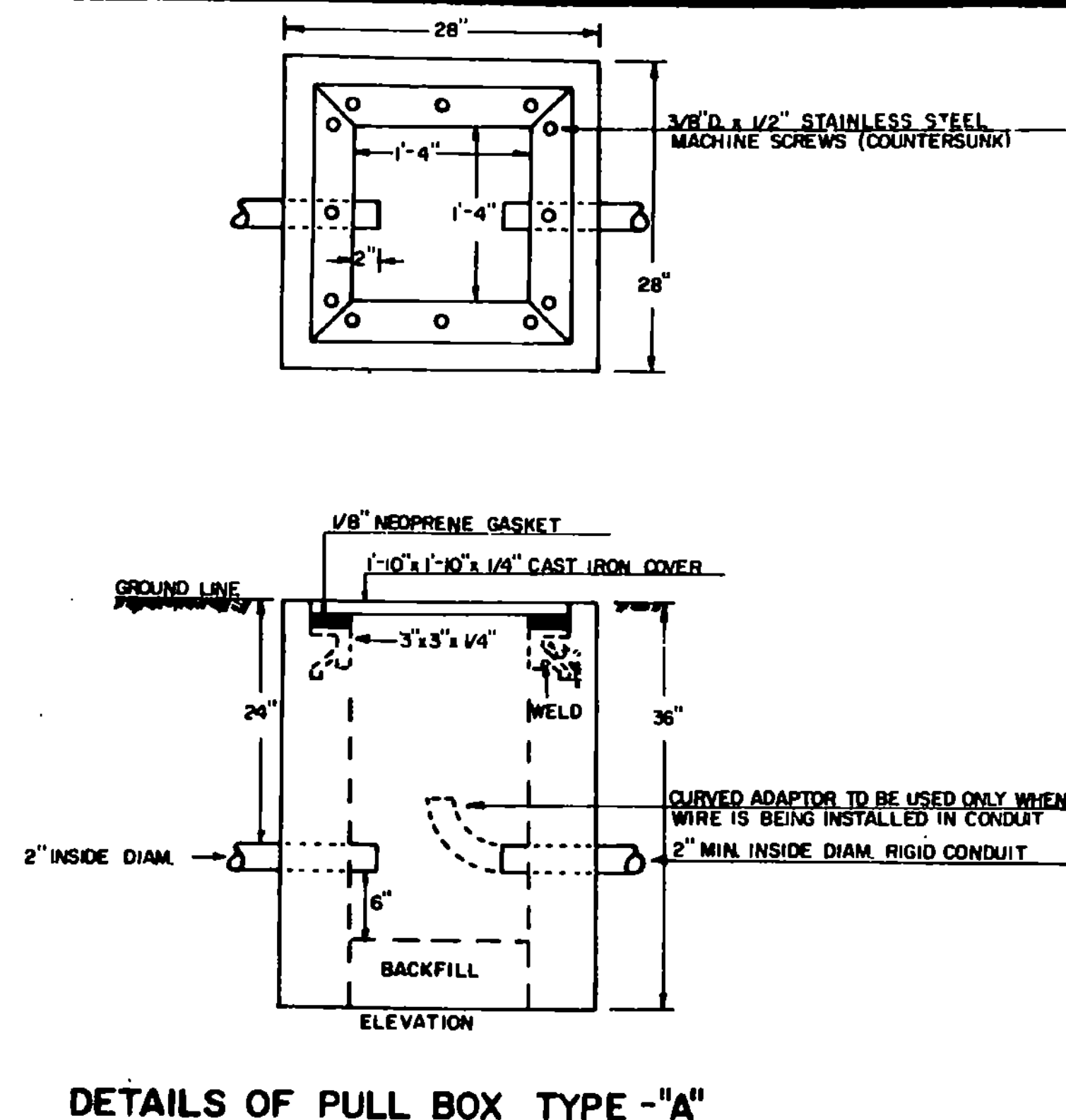
R. W. Arnold
CHIEF ENGINEER
E. B. Stickney
ASST. CHIEF ENGINEER
G. M. Lane
HIGHWAY ENGINEER

STANDARD SIGN PLACEMENT CONVENTIONAL ROAD



STANDARD

E-29



REVISIONS AND CORRECTIONS

APRIL 29, 1980 CHANGED MATERIAL SPECIFIED FOR SCREWS ATTACHING COVER TO PULL BOXES.

AUG. 6, 1981 CHANGED GROUND ROD FROM 1" x 10' TO 5/8" x 8'

FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

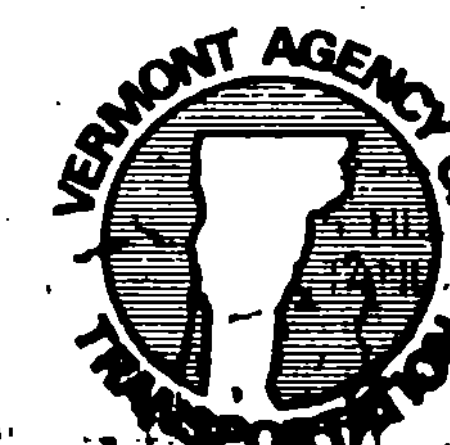
APPROVED
Dec. 17, 1971
DATE

R.H. Arnold
CHIEF ENGINEER

E.H. Stickney
ASST. CHIEF ENGINEER

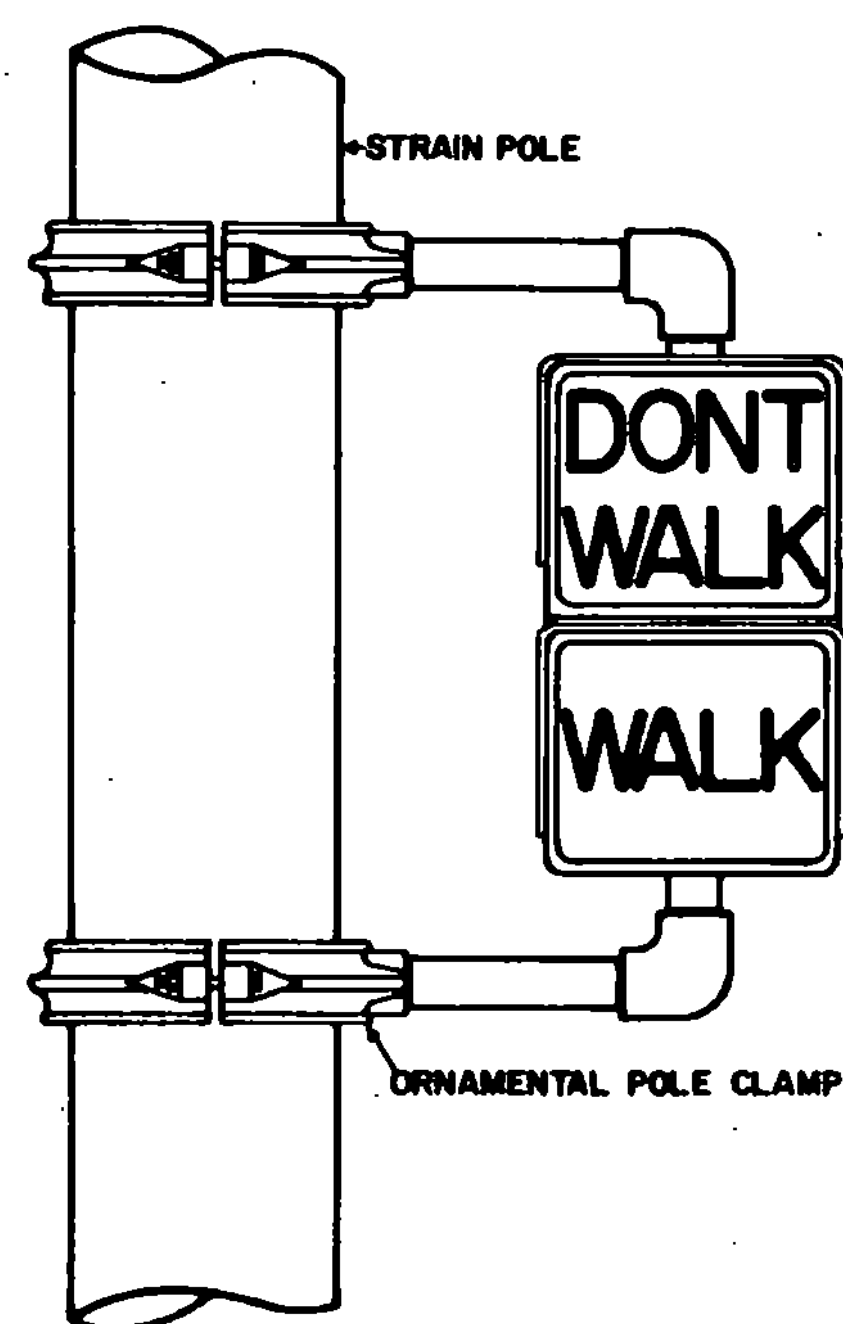
S.M. Lane
HIGHWAY ENGINEER

TRAFFIC CONTROL SIGNALS



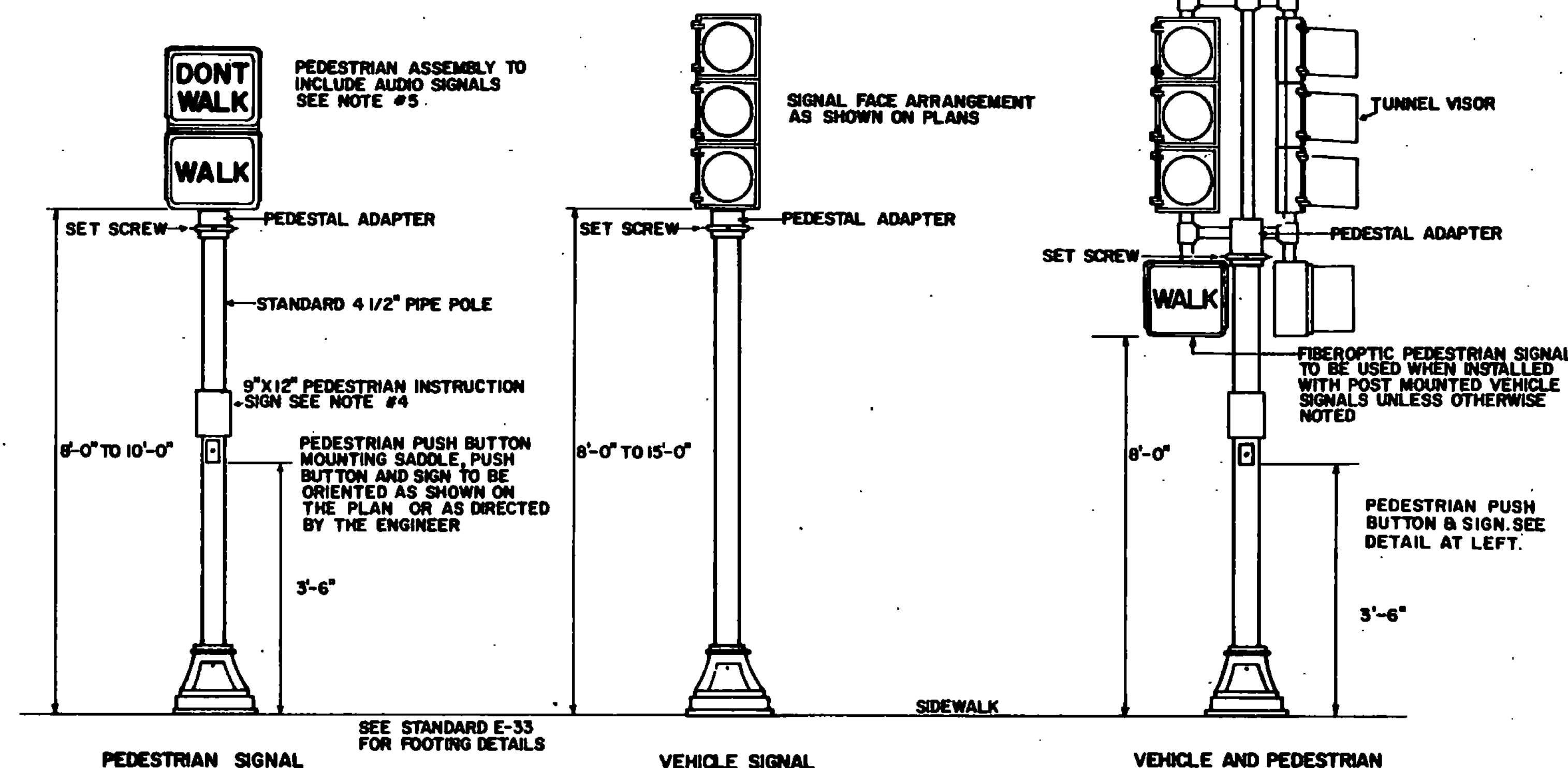
STANDARD

E-33

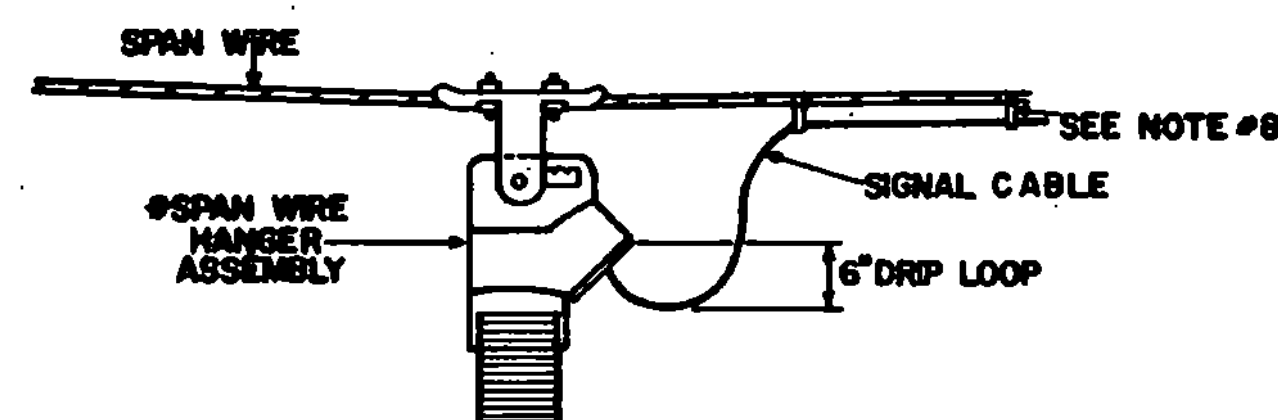


ASSEMBLY AS INDICATED ON PLANS-PEDESTRIAN HEAD DRAWN ONLY AS REFERENCE

POLE MOUNTING DETAIL



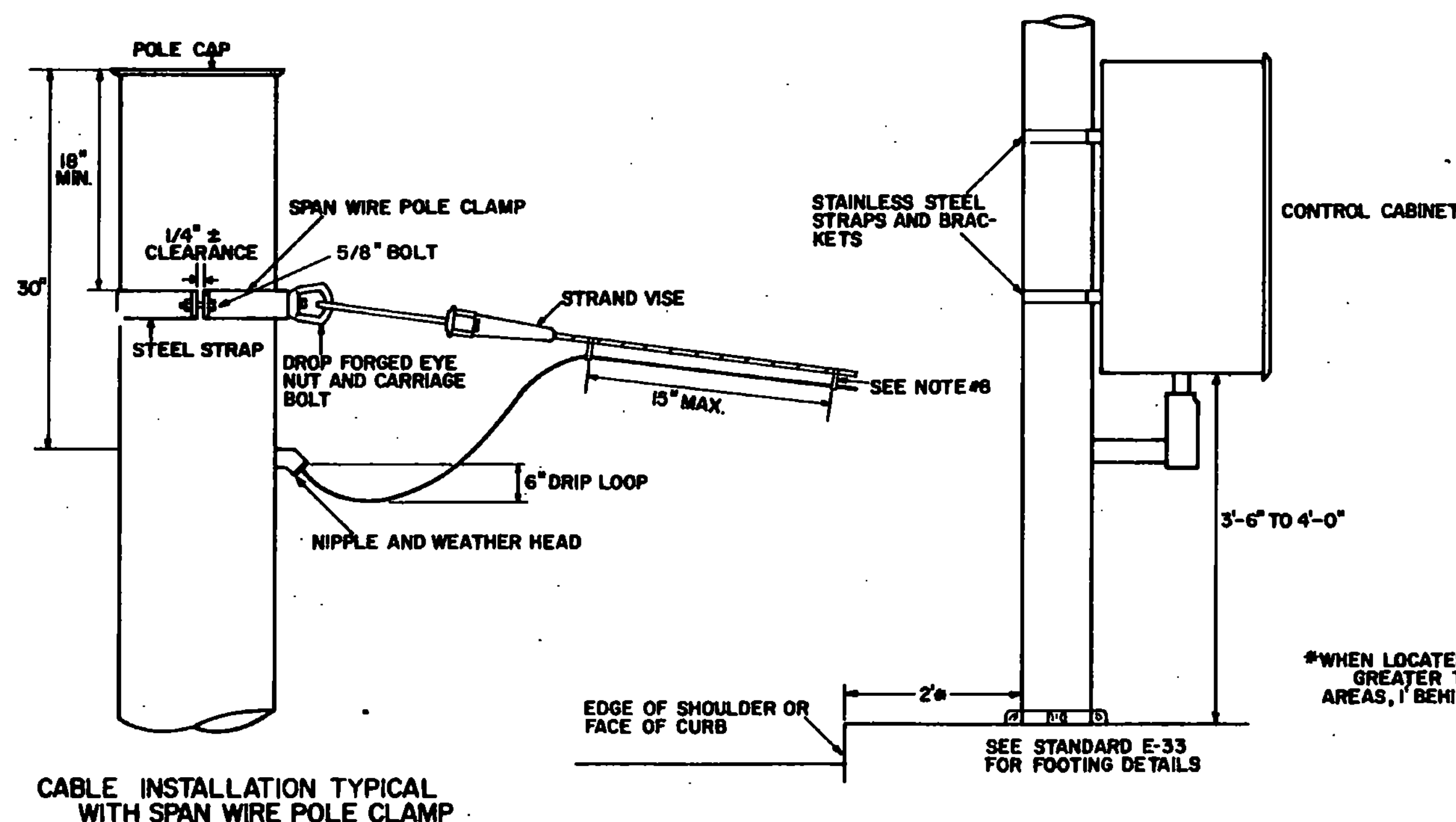
PEDESTAL POLE INSTALLATION



WHERE BACKPLATES ARE REQUIRED, THE SIGNAL IS TO BE LOWER SO THAT THE BACKPLATE IS BELOW MESSENGER CABLE.

*A SWIVEL BALANCE ADJUSTER MAY BE REQUIRED WHEN MULTIFACE SIGNAL HEADS WILL NOT HANG PLUMB.

SPAN WIRE MOUNTING TYPICAL



POLE MOUNTED CONTROL CABINET TYPICAL

NOTES

- 1) Dimension "D" as shown on Standard E-33 shall not be less than 16'-6", unless otherwise stated.
- 2) For solid state equipment, the traffic signal equipment design and performance shall meet or exceed all requirements of the NEMA Standards for traffic control systems.
- 3) All electrical wire and cable shall be copper. Electrical signal cable from traffic signal controller to signal heads shall be composed of A.M.S. #12 stranded conductors.
- 4) Pedestrian push buttons should be mounted 3.5 feet above the sidewalk or ground with the "PUSH BUTTON FOR WALK SIGNAL" sign mounted immediately above; or incorporated in the Push Button Unit. The unit shall include a pilot light which upon actuation, shall be illuminated until the "WALK" indication, steady or flashing, is displayed.
- 5) The pedestrian signal heads shall have audio signals to indicate allowable pedestrian movement for the visually impaired during the pedestrian phase. They shall be of the type normally used for such an installation and be wired in such a way as to be easily disconnected. The audio signal shall be a steady tone during the walk interval.
- 6) Signal timing is approximate and is not to be considered final. All necessary hardware to change the timing shall be on hand when the lights are installed. The Resident Engineer shall perform checks during the AM and PM peak periods to insure optimum settings. If required, appropriate timing changes shall be made to "tune" the controller to its best efficiency prior to final inspection. Timing changes will be established by a representative of the VDOT Traffic Design Section. Timing adjustments shall be subsidiary to Item 678.15, Traffic Control Signals.
- 7) The traffic signal strain poles shall be back raked before the wires and signals are installed so that the poles will have a pleasing appearance when dead load deflection due to span wire and signal heads occurs. The amount of set back shall be as shown on the plans.
- 8) The stranded conductor signal cable shall be attached to the span wire by galvanized steel cable rings every 15 inches or attached to the span wire with stainless alloy .430 lashing (spinning) wire.
- 9) When street lights are installed on a traffic signal strain pole, the luminaires and mast arms are included under the Item 678.15, Traffic Control Signals. Particular attention should be given to Section 679 Street Lighting to ensure compliance with all the requirements of that section.
- 10) When pavement markings are included as contract items, the contractor shall be responsible for the maintenance of the pavement markings until the project is accepted. If the markings become discolored, faded or worn, they shall be replaced at no additional cost. Pavement markings shall be applied as soon as the roadway surface is completed. The signal system shall not operate without the appropriate pavement markings.
- 11) The signal heads shall be covered with an opaque covering until such time as the signal system is functional. At no time should the heads be viewed without having some form of signal indication i.e., flashing operation or sequencing as per plan.
- 12) THE CONFLICT MONITOR SHALL BE CAPABLE OF DETECTING A LACK OF RED SIGNAL AS WELL AS THE GREEN, YELLOW & WALK SIGNALS.
- 13) THE CABINET AMPLIFIERS & PHASE MODULES INSIDE THE CONTROLLER CABINET SHALL HAVE LABELS TO INDICATE WHICH MOVEMENT GOES WITH EACH. THE LABELS SHALL BE 1/2" WIDE PLASTIC SELF STICKING TAPE WITH RAISED LETTERS.
- 14) PEDESTRIAN PUSH BUTTONS SHALL BE INSTALLED AT EACH END OF EACH CROSS-WALK WHERE ACTUATED PEDESTRIAN SIGNALS ARE INSTALLED OR AS SHOWN ON THE PLANS.
- 15) THE CONTRACTOR SHALL PROVIDE TWO COPIES OF THE INSTRUCTION MANUALS FOR THE CONTROLLER, LOOP DETECTORS, CONFLICT MONITORS AND ANY OTHER EQUIPMENT INCLUDED IN THE CABINET, ONE COPY IS TO BE KEPT IN THE CABINET AND THE OTHER GIVEN TO THE PARTY RESPONSIBLE FOR MAINTENANCE OF THE SIGNAL SYSTEM.
- 16) FOR PROGRAMABLE SOLID STATE CONTROLLERS TWO COPIES OF THE FINAL PROGRAM LISTING SHALL BE PROVIDED AND DISTRIBUTED AS DETAILED IN NOTE 15.
- 17) PHASING CHANGES, IF REQUESTED AND FEASIBLE, SHALL BE CONSIDERED AS PART OF THE CONTRACT. EXTRA COMPENSATION FOR THE CHANGES WILL BE AUTHORIZED FOLLOWING APPROVAL OF THE ESTIMATE.

REVISIONS AND CORRECTIONS

DATE: 8/23/82 NOTES 12,13 & 14 ADDED TO PLANS
3/22/83 Notes 15,16,17 added to sheet
FEB. 3, 1986-UPDATED TO 1985 SPECIFICATIONS

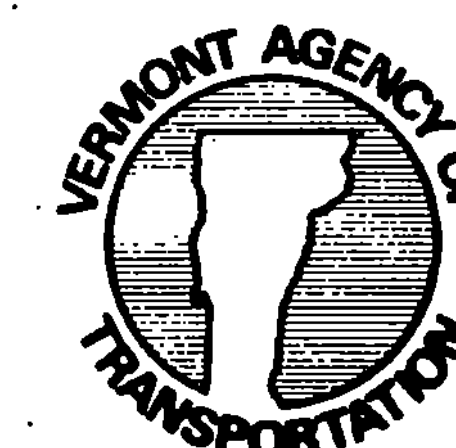
APPROVED: JULY 31, 1981
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

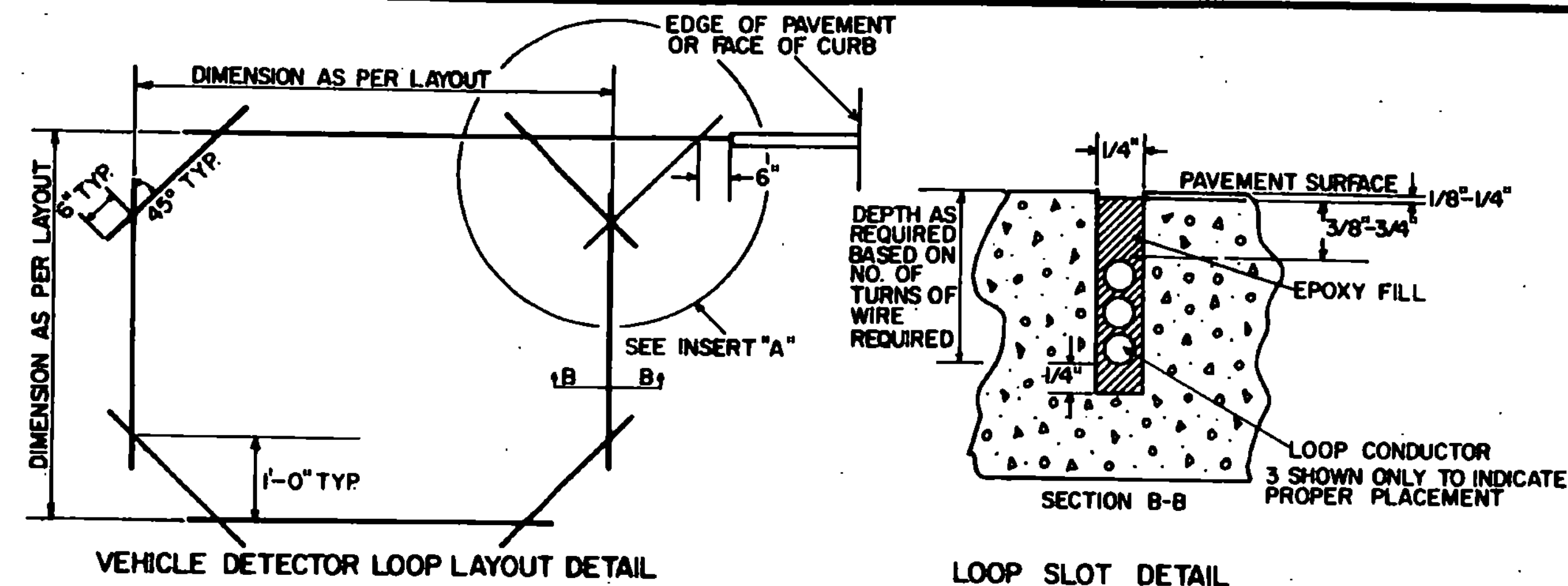
TRANSPORTATION DESIGN ENGINEER

TRAFFIC SIGNAL ITEM DETAILS



STANDARD

E-34



RECTANGULAR LOOPS VEHICLE DETECTOR LOOP INDUCTANCE DESIGN TABLE									
SHORTER DIMENSION OF LOOP					LOOP PERIMETER (FT.)	LOOP INDUCTANCE (MICROHENRIES)			
LARGER LOOP DIM. (FT.)	LARGER LOOP AREA (SQ. FT.)	8 FEET LARGER LOOP DIM. (FT.)	8 FEET LARGER LOOP AREA (SQ. FT.)	10 FEET LARGER LOOP DIM. (FT.)		1 TURN	2 TURNS	3 TURNS	4 TURNS
6	36	8	64	10	100	24	11	40	82
8	64	10	100	12	144	28	13	47	96
10	100	12	144	14	196	32	15	54	109
12	144	14	196	16	256	36	16	60	123
14	196	16	256	18	324	40	18	67	137
16	256	18	324	20	400	44	20	74	151
18	324	20	400	22	484	48	22	81	164
20	400	22	484	24	576	52	24	88	178
22	484	24	576	26	676	56	26	95	191
24	576	26	676	28	784	60	28	102	204
26	676	28	784	30	900	64	30	109	217
28	784	30	900	32	1024	68	32	116	230
30	900	32	1024	34	1156	72	34	123	243
32	1024	34	1156	36	1296	76	36	130	256
34	1156	36	1296	38	1444	80	38	137	269
36	1296	38	1444	40	1600	84	40	144	282
38	1444	40	1600	42	1764	88	42	151	295
40	1600	42	1764	44	1936	92	44	158	308
42	1764	44	1936	46	2116	96	46	165	321
44	1936	46	2116	48	2304	100	48	172	334
46	2116	48	2304	50	2500	104	50	179	347
48	2304	50	2500	52	2704	108	52	186	360
50	2500	52	2704	54	2916	112	54	193	373
52	2704	54	2916	56	3136	116	56	200	386
54	2916	56	3136	58	3364	120	58	207	399
56	3136	58	3364	60	3600	124	60	214	412
58	3364	60	3600	62	3844	128	62	221	425
60	3600	62	3844	64	4096	132	64	228	438
62	3844	64	4096	66	4356	136	66	235	451
64	4096	66	4356	68	4624	140	68	242	464
66	4356	68	4624	70	4900	144	70	249	477
68	4624	70	4900	72	5184	148	72	256	490
70	4900	72	5184	74	5476	152	74	263	503
72	5184	74	5476	76	5776	156	76	270	516
74	5476	76	5776	78	6084	160	78	277	529
76	5776	78	6084	80	6400	164	80	284	542
78	6084	80	6400	82	6724	168	82	291	555
80	6400	82	6724	84	7056	172	84	298	568
82	6724	84	7056	86	7396	176	86	305	581
84	7056	86	7396	88	7744	180	88	312	594
86	7396	88	7744	90	8100	184	90	319	607
88	7744	90	8100	92	8464	188	92	326	620
90	8100	92	8464	94	8836	192	94	333	633
92	8464	94	8836	96	9216	196	96	340	646
94	8836	96	9216	98	9604	200	98	347	659
96	9216	98	9604	100	10000	204	100	354	672
98	9604	100	10000	102	10404	208	102	361	685
100	10000	102	10404	104	10816	212	104	368	698

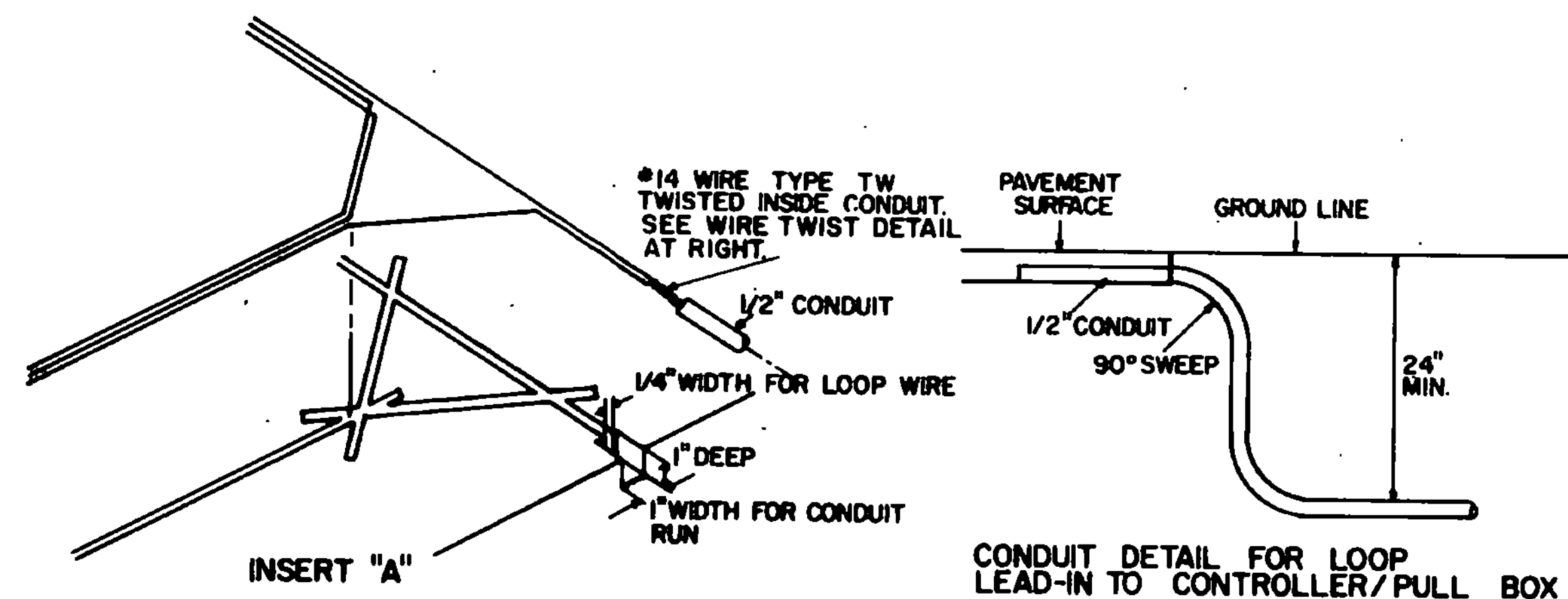
NOTE 1: TO THE ABOVE LOOP INDUCTANCES, ADD 25 MICROHENRIES FOR EACH 100 FEET OF LEAD-IN CABLE FROM THE PAVEMENT LOOP TO THE DETECTOR CABINET. LOOP FEEDER LENGTH SHALL NOT EXCEED 750 FEET FOR A SINGLE OR MULTIPLE LOOP SYSTEM.

NOTE 2: THE INDUCTANCE FORMULA USED FOR THE TABLE ABOVE IS $L = K \cdot N^2$ WHERE $K = 0.001$ THIS IS THE MARYLAND-ILLINOIS FORMULA FROM A REPORT ON VEHICLE DETECTION BY KLATT (1973).

NOTE 3: WHEN LOOPS ARE CONNECTED IN SERIES, THE TOTAL INDUCTANCE BECOMES THE SUM OF ALL INDUCTANCES. WHEN LOOPS ARE CONNECTED IN PARALLEL (PREFERRED DESIGN) THE COMBINED INDUCTANCE WILL EQUAL THE PRODUCT OF THE INDUCTANCES DIVIDED BY THE SUM, PLUS THE LOOP FEEDER INDUCTANCES.

VEHICLE DETECTOR LOOP NOTES

- 1) THE TERM "VEHICLE DETECTOR LOOP" SHALL REFER TO THE SENSOR ELEMENT IMBEDDED IN THE PAVEMENT WHICH SENSES VEHICLE PASSAGE OR PRESENCE. THE TERM "CABINET AMPLIFIER" SHALL REFER TO THE ELECTRICAL OR ELECTRONIC DEVICE LOCATED IN THE CONTROL CABINET WHICH RESPONDS DIRECTLY TO A VEHICLE ACTUATION AND INTERFACES WITH THE CONTROLLER.
- 2) WHEN THE DISTANCE FROM THE VEHICLE DETECTOR LOOP TO THE CONTROLLER EXCEEDS 250 FEET, 12 AWG WIRE SHALL BE USED FOR THE FEEDER WIRE, BELDEN SHIELDED CABLE SHALL BE USED TO EXTEND LOOP LEAD-INS TO THE CONTROLLER CABINET.
- 3) THE VEHICLE DETECTOR LOOPS SHALL BE INSTALLED IN SUCH A WAY AS TO MAXIMIZE SENSITIVITY AND SHALL BE CAPABLE OF DETECTING MOTORCYCLES AND BICYCLES. WHILE ELIMINATING FALSE CALLS FROM VEHICLES IN ADJACENT LANES. LOOPS ARE DESIGNED SO THAT THE LOOPS AND FEEDER LINES TOTAL INDUCTANCE THAT EXISTS AT THE AMPLIFIER IS AT THE CENTER OF RANGE WITH REGARD TO INDUCTANCE (DESIGN VALUE OF 350 MICROHENRIES, ASSUMED). INDUCTANCE AND CAPACITANCE MEASUREMENTS SHALL BE TAKEN AND RECORDED PRIOR TO AND AFTER THE SAW SLOTS ARE SEALED.
- 4) THE LOOPS ARE CENTERED IN THEIR RESPECTIVE LANE, UNLESS OTHERWISE NOTED.



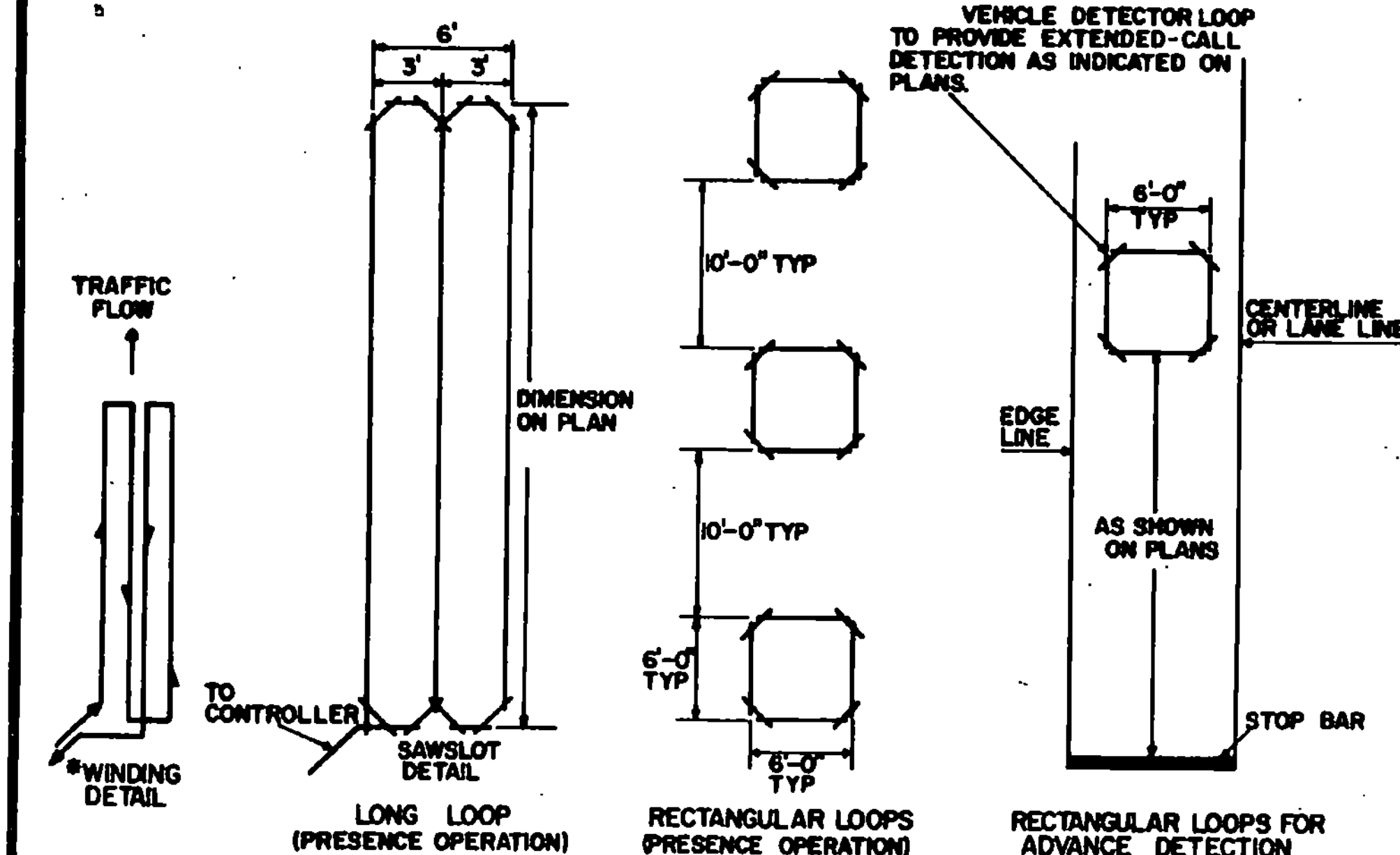
WIRE TWIST DETAIL
MINIMUM 2 TO 5 TWISTS PER FOOT. CLOCKWISE & COUNTERCLOCKWISE TWISTS ALTERNATING ARE ACCEPTABLE.

DESIGN VALUES	
AVAILABLE CONDUIT AREA	CONDUCTOR SIZE TABLE
SIZE	TYPE
1"	#14
1 1/4"	#12
1 1/2"	#10
2"	#8
2 1/2"	#6
3"	
3 1/2"	

*1976 NATIONAL ELECTRICAL CODES INDICATES 40% FILL

INSTALLATION NOTES

- 1) NO WIRE SPLICING EXCEPT IN PULL BOXES. SPLICES SHALL BE SOLDERED (ROSIN CORE) AND WRAPPED WITH PLASTIC TAPE AND COATED WITH A SEALANT USED FOR SUCH PURPOSES.
- 2) BEFORE LAYING IN THE LOOP WIRE, A ONE-QUARTER INCH OF SEALANT SHALL BE PLACED IN THE SAW SLOT AND ALLOWED TO SET UP SUFFICIENTLY TO GIVE THE WIRE SOME SUPPORT. EACH WIRE SHALL BE PLACED IN THE SAW SLOT WITH A BLUNT WOODEN STICK AND SEALED BEFORE PLACING THE NEXT WIRE ON TOP UNTIL THE REQUIRED NUMBER OF TURNS IS COMPLETE.
- 3) VEHICLE DETECTOR LOOPS SHALL NOT BE PLACED ON THE BASE COURSE AND PAVED OVER. SAW-CUTS SHALL BE MADE IN THE FINAL PAVEMENT COURSE AND THE LOOPS INSTALLED IN THEM.
- 4) LOOP LEAD-INS FROM ADJACENT LOOPS SHALL BE IN SEPARATE SAW-SLOTS TO THE CURB PULL BOX.
- 5) LOOP FEEDERS SHALL BE AT LEAST ONE FOOT AWAY FROM POWER WIRING.



LONG LOOPS VEHICLE DETECTOR LOOP INDUCTANCE DESIGN TABLE				
LOOP INDUCTANCE (MICROHENRIES)				
LARGER LOOP DIMENSION	4 FEET 1 TURN	6 FEET 2 TURNS	8 FEET 2 TURNS	10 FEET 2 TURNS
10	29	92	31	98
20	41	132	43	136
30	54	172	56	178
40	69	212	69	220
50	84	252	84	262
60	99	292	99	304
70	114	332	114	346
80	129	372	129	388
90	144	412	144	430
100	159	452	159	472
110	174	492	174	514
120	189	532	189	556
130	204	572	204	598
140	219	612	219	640
150	234	652	234	682
160	249	692	249	724
170	264	732	264	766
180	279	772	279	808
190	294	812	294	850
200	309	852	309	892
210	324	892	324	934
220	339	932	339	976
230	354	972	354	1018
240	369	1012	369	1060
250	384	1052	384	1102
260	399	1092	399	1144
270	414	1132	414	1186
280	429	1172	429	1228
290	444	1212	444	1270
300	459	1252	459	1312
310	474	1292	474	1354
320	489	1332	489	1396
330	504	1372	504	1438
340	519	1412	519	1480
350	534	1452	534	1522
360	549	1492	549	1564
370	564	1532	564	1606
380	579	1572	579	1648
390	594	1612	594	1690
400	609	1652	609	1732
410	624	1692	624	1774
420	639	1732	639	1816
430	654	1772	654	1858
440	669	1812	669	1900
450	684	1852	684	1942
460	699	1892	699	1984
470	714	1932	714	2026
480	729	1972	729	2068
490	744	2012	744	2110
500	759	2052	759	2152

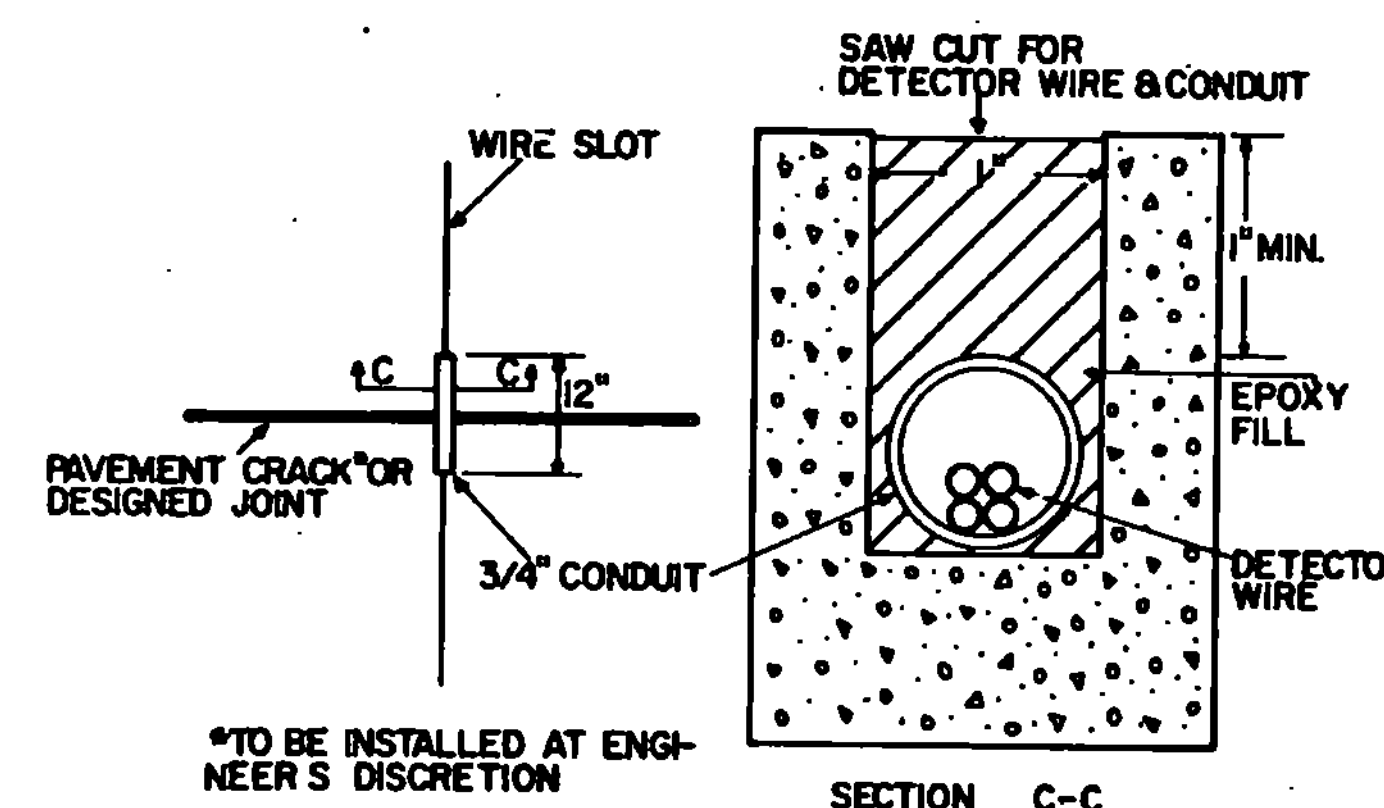
NOTE 1: SAME AS #1 FOR RECTANGULAR LOOPS.

NOTE 2: THE ABOVE INDUCTANCES ARE ESTIMATED QUANTITIES USING THE FOLLOWING EQUATIONS:

1 TURN = (PERIMETER X 0.5) + (LARGER DIMENSION X 1.5)

2 TURNS = (PERIMETER X 1.5) + (LARGER DIMENSION X 5.0)

NOTE 3: SAME AS #3 FOR RECTANGULAR LOOPS.



REVISIONS AND CORRECTIONS

DATE: 10/21/81 LONG LOOP INDUCTANCE TABLE ADDED.

8/23/82 NOTES 4 & 5 ADDED

FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED: JULY 28, 1981

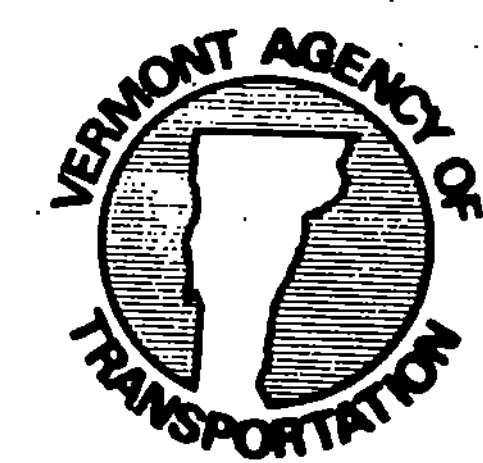
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

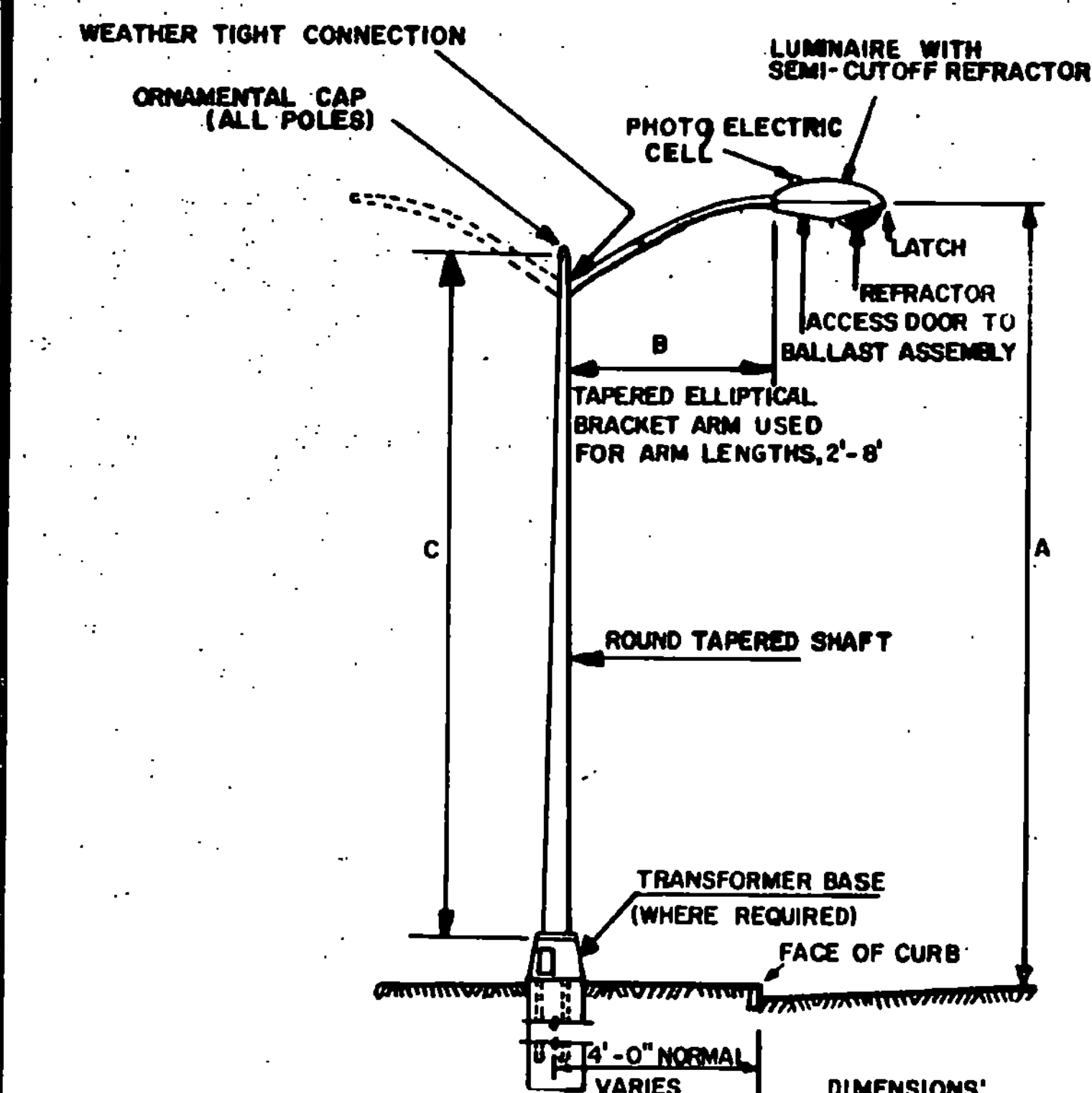
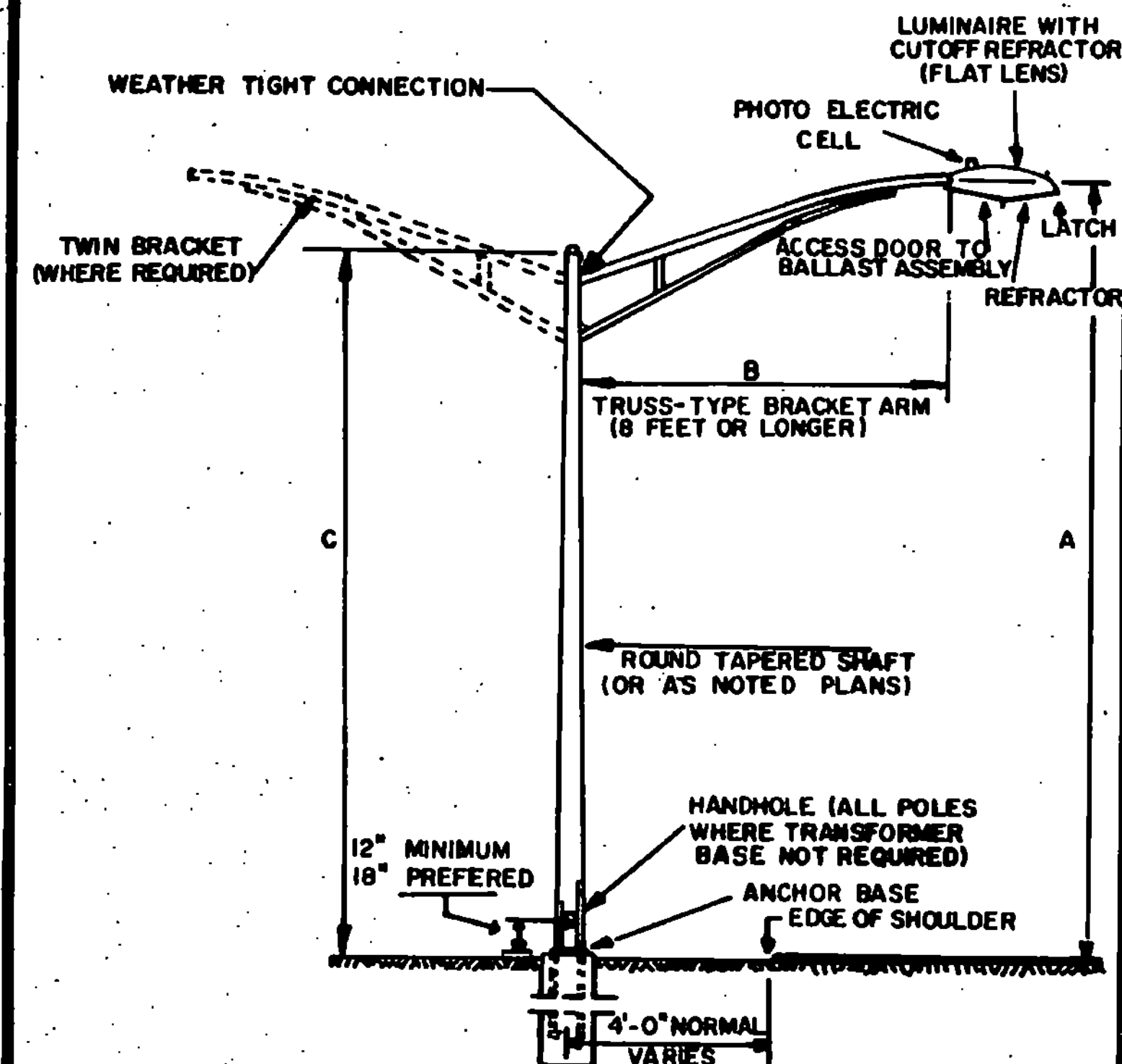
TRANSPORTATION DESIGN ENGINEER

VEHICLE DETECTOR LOOP DETAILS



STANDARD
E-36

ROUND ALUMINUM AND STEEL POLES



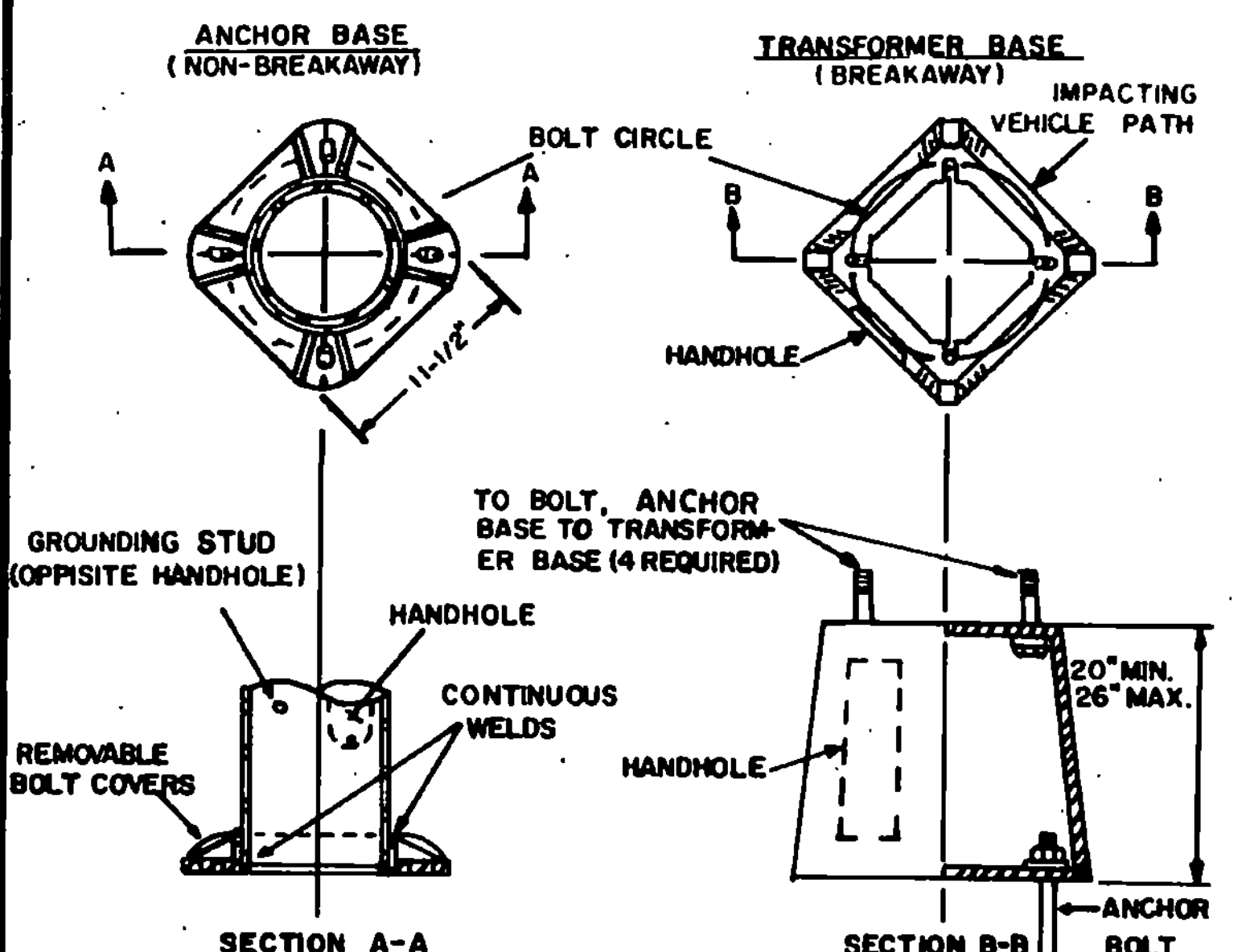
ALL POLES TO BE EQUIPPED WITH ANCHOR BASES UNLESS OTHERWISE INDICATED.

ALL BRACKETS TO BE EQUIPPED WITH 2" SLIPFITTER FOR MOUNTING LUMINAIRE UNLESS OTHERWISE INDICATED.

DIMENSIONS:
A=MOUNTING HEIGHT
B=BRACKET ARM LENGTH
C=POLE HEIGHT

BASES

DIMENSIONS SHOWN FOR ANCHOR BASES AND TRANSFORMER BASES MAY VARY SLIGHTLY WITH DIFFERENT MANUFACTURERS.

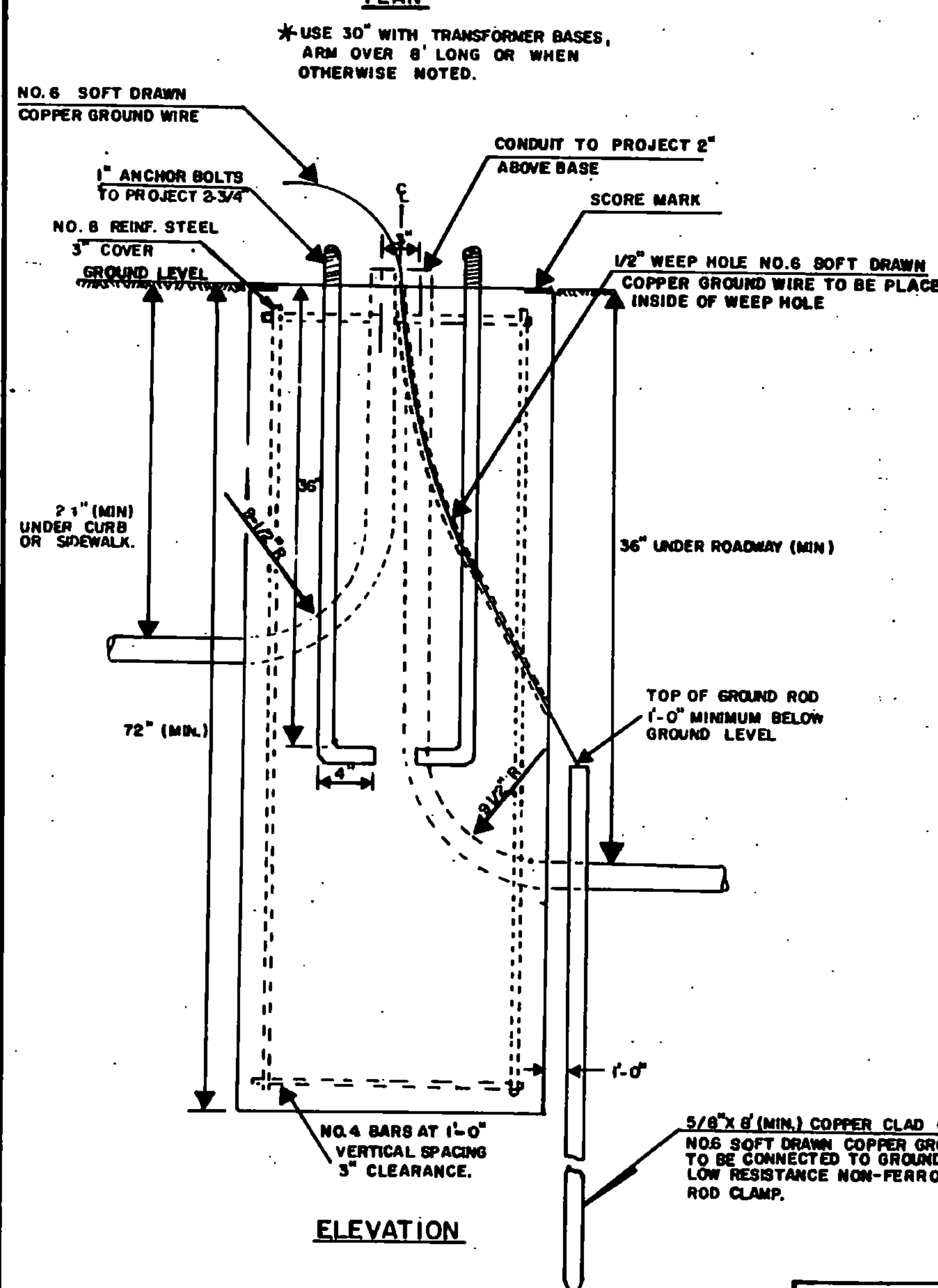
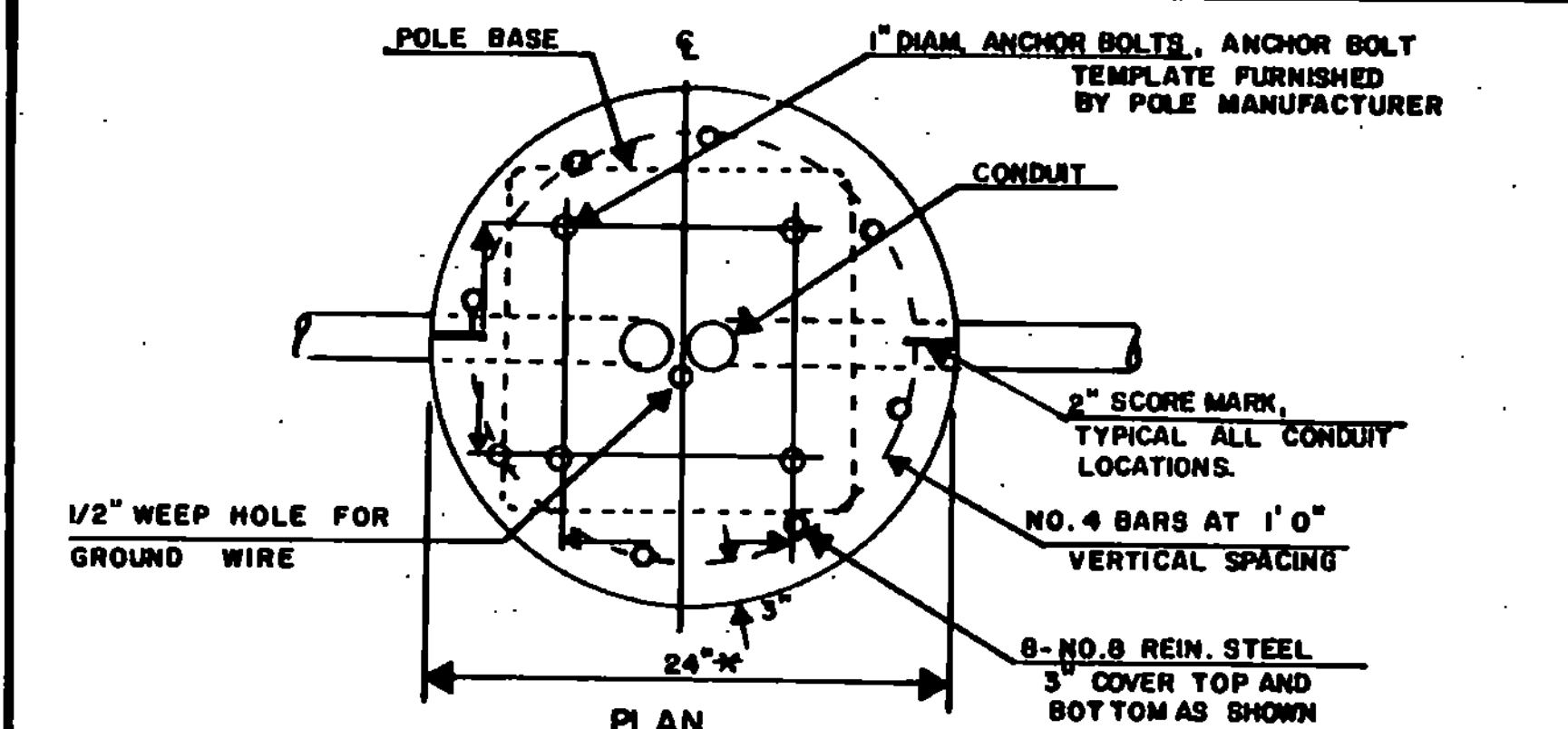


NOTE:
FOR BREAKAWAY DESIGN A TRANSFORMER BASE, BREAKAWAY COUPLINGS, OR OTHER APPROVED METHOD SHALL BE PLACED BETWEEN THE ANCHOR BASE AND THE CONCRETE BASE.

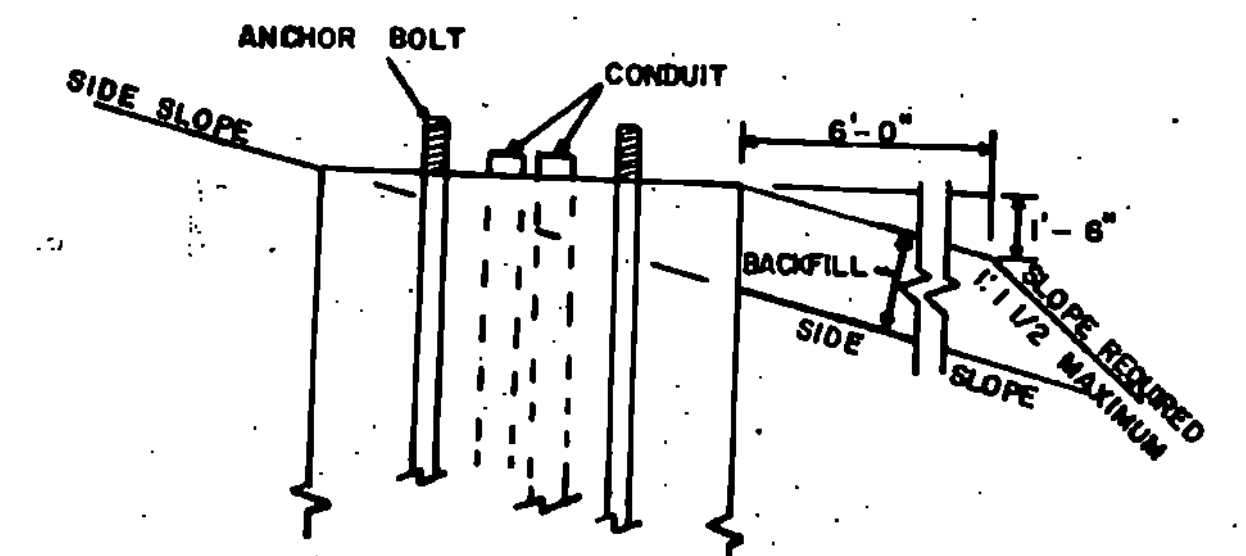
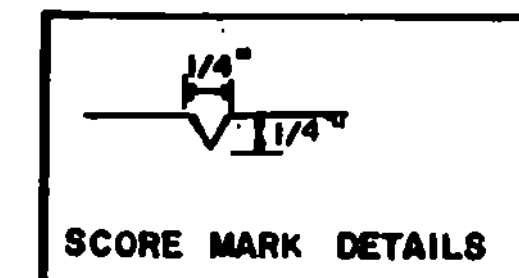
ANCHOR BOLT TEMPLATE FURNISHED BY POLE MANUFACTURER

POLES, ANCHOR BASES, ARMS, AND LUMINAIRES. GENERAL NOTES

1. NO POLE SHALL BE INSTALLED WITHOUT A LUMINAIRE.
2. ANCHOR BASE AND ANCHOR BOLT DIMENSIONS SHOWN ARE FOR A SINGLE ARM POLE OF HEIGHT 35 FEET OR LESS. SEE PLANS FOR OTHER CONDITIONS.
3. ALL POLES OF THE BREAKAWAY DESIGN SHALL YIELD OR BREAKAWAY WITH A CHANGE IN VEHICLE MOMENTUM OF LESS THAN 1100 POUND-SECONDS WHEN STRUCK BY 2250 POUNDS AT 20 MPH. TO 60 MPH.
4. A 12 FOOT OR LONGER ARM REQUIRES A 6 INCH OUTSIDE DIAMETER POLE TOP.
5. LUMINAIRES SHALL MEET SPECIFICATIONS AS SHOWN ON THE PLANS.
6. ALL ELECTRICAL MATERIAL AND ELECTRICAL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE AREA ELECTRICAL INSPECTOR AND/OR THE POWER COMPANY WITH JURISDICTION IN THE PROJECT AREA.
7. ALL WORK MUST MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, AS WELL AS LOCAL AND STATE CODES.
8. ALL STREET LIGHT POLES SHALL HAVE A METAL TAG ATTACHED TO THE HANDHOLE WITH THE POLE NUMBER, WATTAGE AND TYPE OF LAMP. EXAMPLE NO. 2-150W.-H.P.S. (H.P.S.=HIGH PRESSURE SODIUM). MINIMUM LETTER SIZE 1/2 INCH HIGH. PAYMENT FOR TAGS WILL BE SUBSIDIARY TO ITEM 679.15, STREET LIGHTING.
9. POLES, BASE PLATES, ANCHOR BOLTS AND ARMS SHALL MEET THE SPECIFICATION OF THE LATEST EDITION OF AASHTO-AGC-ARTBA'S GUIDE TO STANDARDIZED HIGHWAY LIGHTING POLY HARDWARE.



CONCRETE BASE



SIDE SLOPE TREATMENT FOR CONCRETE BASE

CONCRETE BASE NOTES

1. ALL CONCRETE BASES TO BE CONCRETE, CLASS B
2. ALL REINFORCING STEEL TO CONFORM TO THE REQUIREMENTS FOR "REINFORCING STEEL"
3. TEMPLATE FOR ANCHOR BOLTS, ANCHOR BOLTS, NUTS AND WASHERS TO BE OBTAINED BY CONTRACTOR FROM MANUFACTURER PRIOR TO CONSTRUCTION OF BASES.
4. SCORE TOP OF CONCRETE BASE TO SHOW LOCATION OF CONDUIT (IS CONDUIT SIZE- AS SHOWN ON THE PLANS.
5. EXPOSED METAL HARDWARE SHALL BE GALVANIZED OR STAINLESS STEEL.

REVISIONS AND CORRECTIONS

JUNE 17, 1985 TRANSFORMER BASE STD. VEHICLE PATH CHANGED. SLOPE TREATMENT FOR CONCRETE BASE CHANGED.

FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED

DATE JULY 20, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

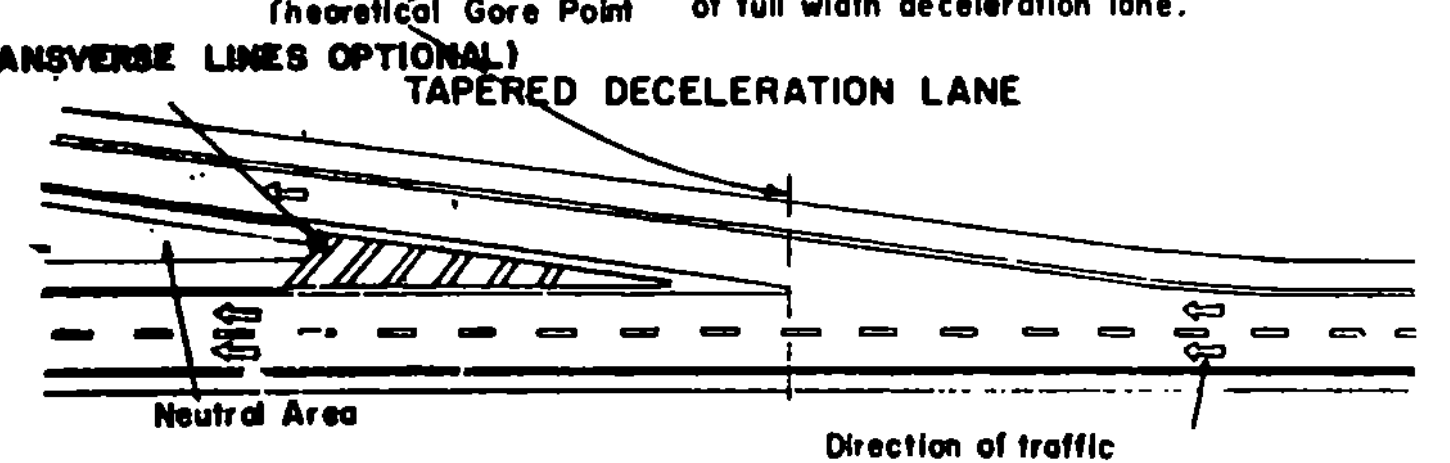
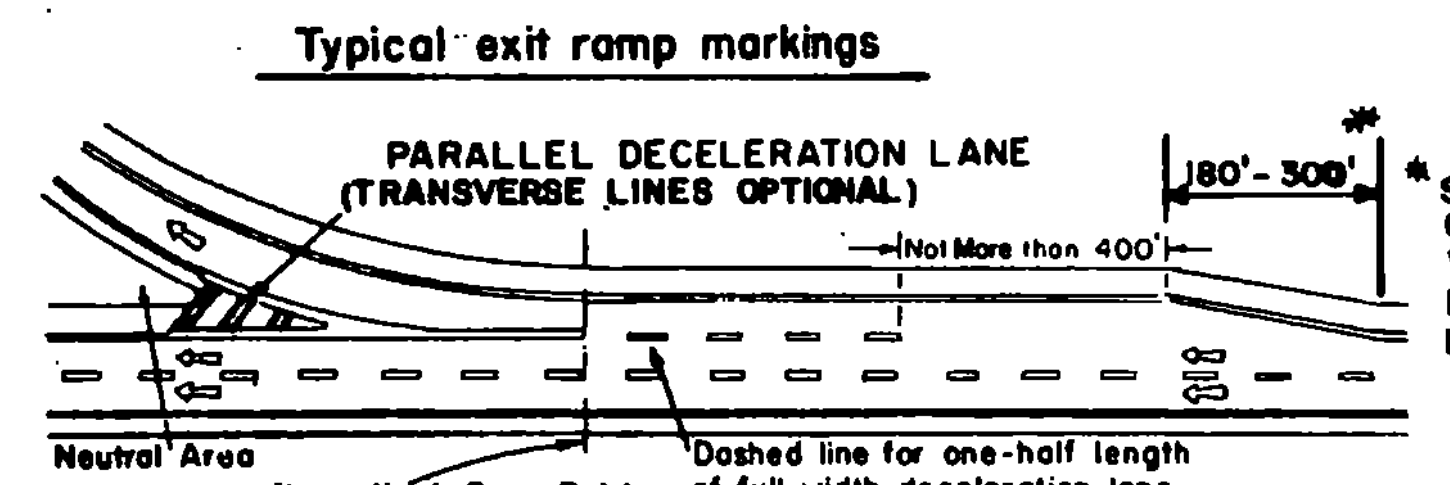
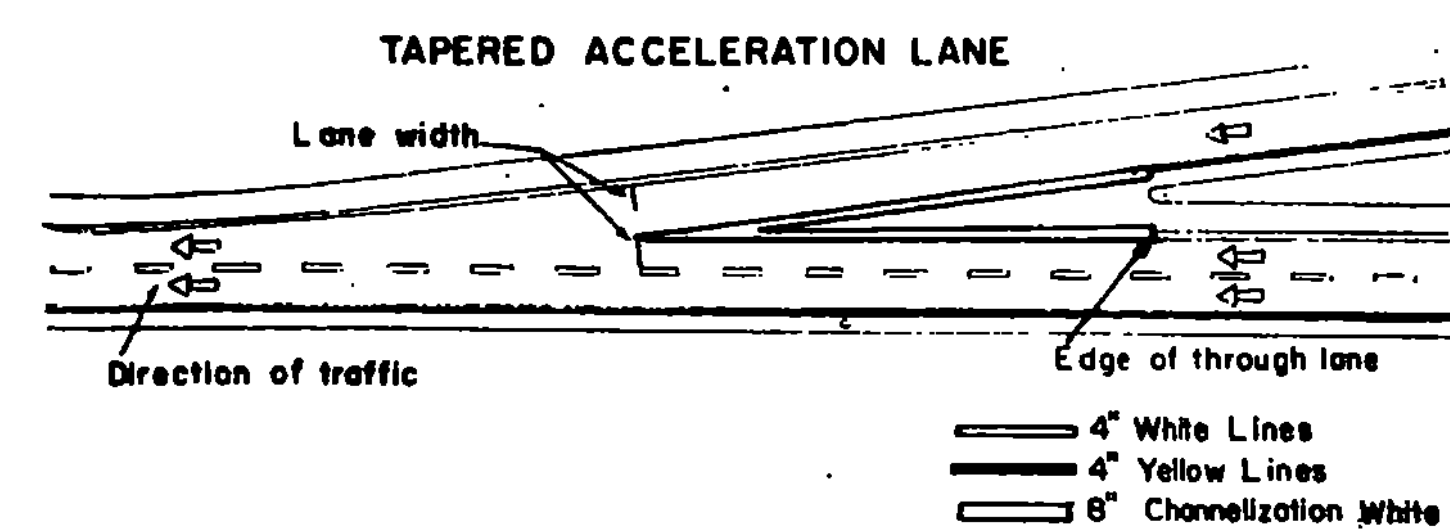
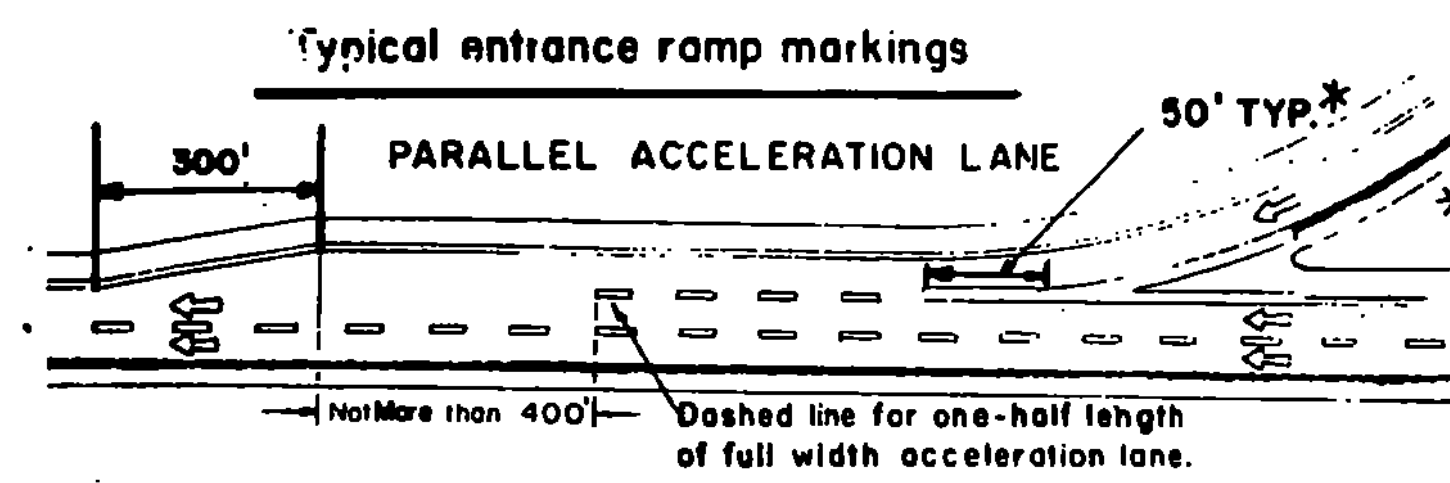
CHIEF OF DESIGN

SURVEY AND PLANS ENGINEER

STREET LIGHTING ITEM DETAILS

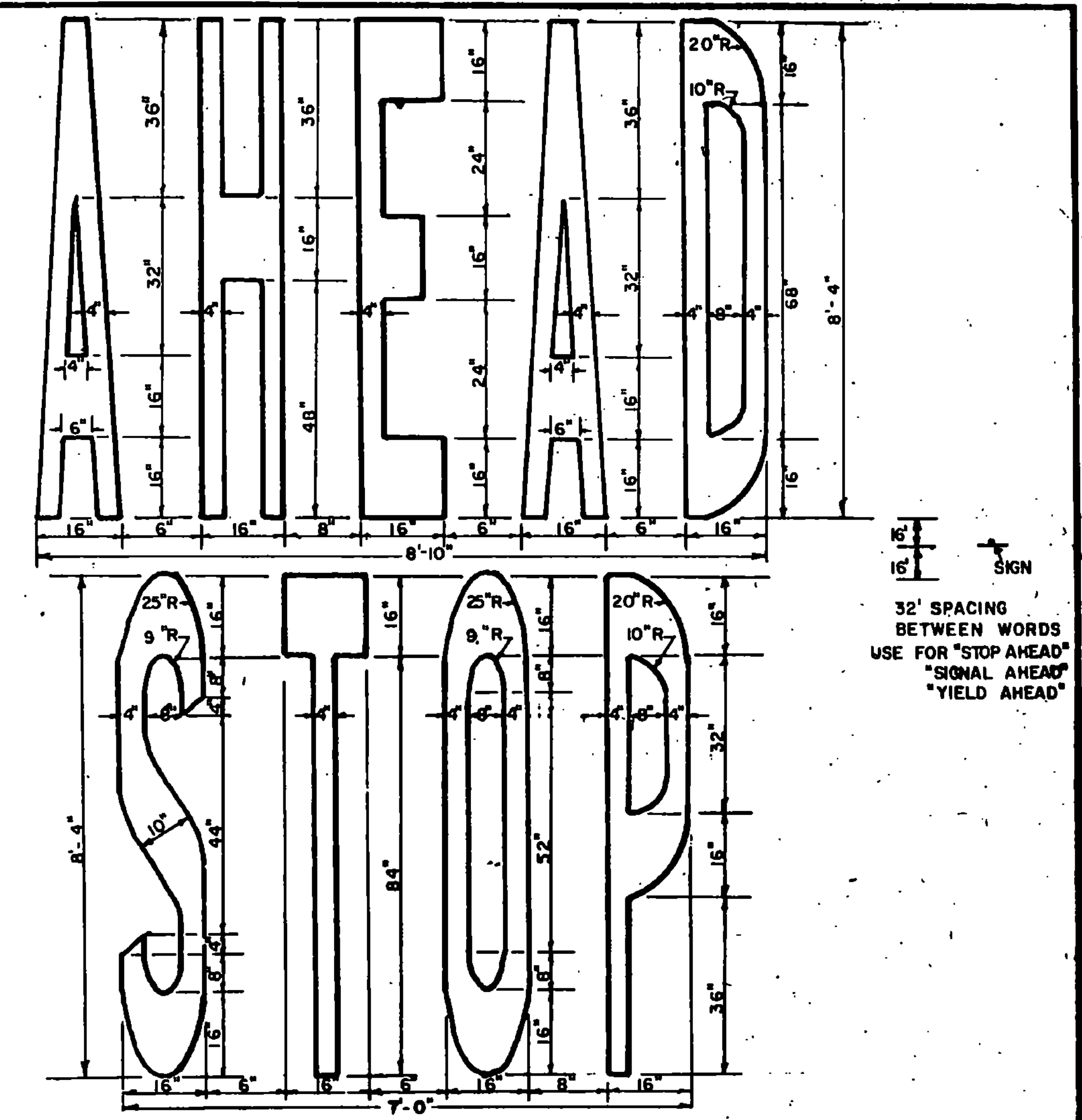
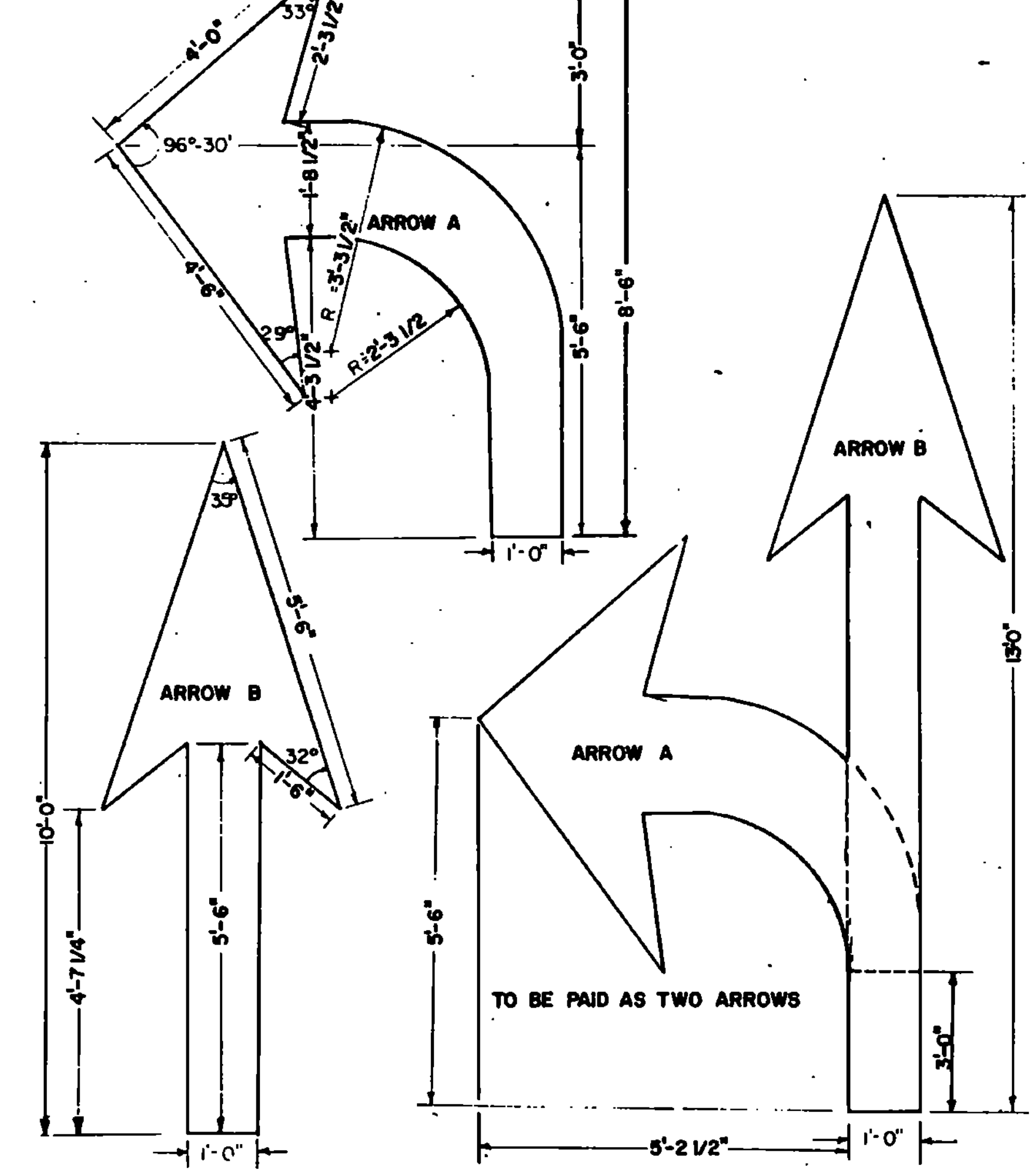
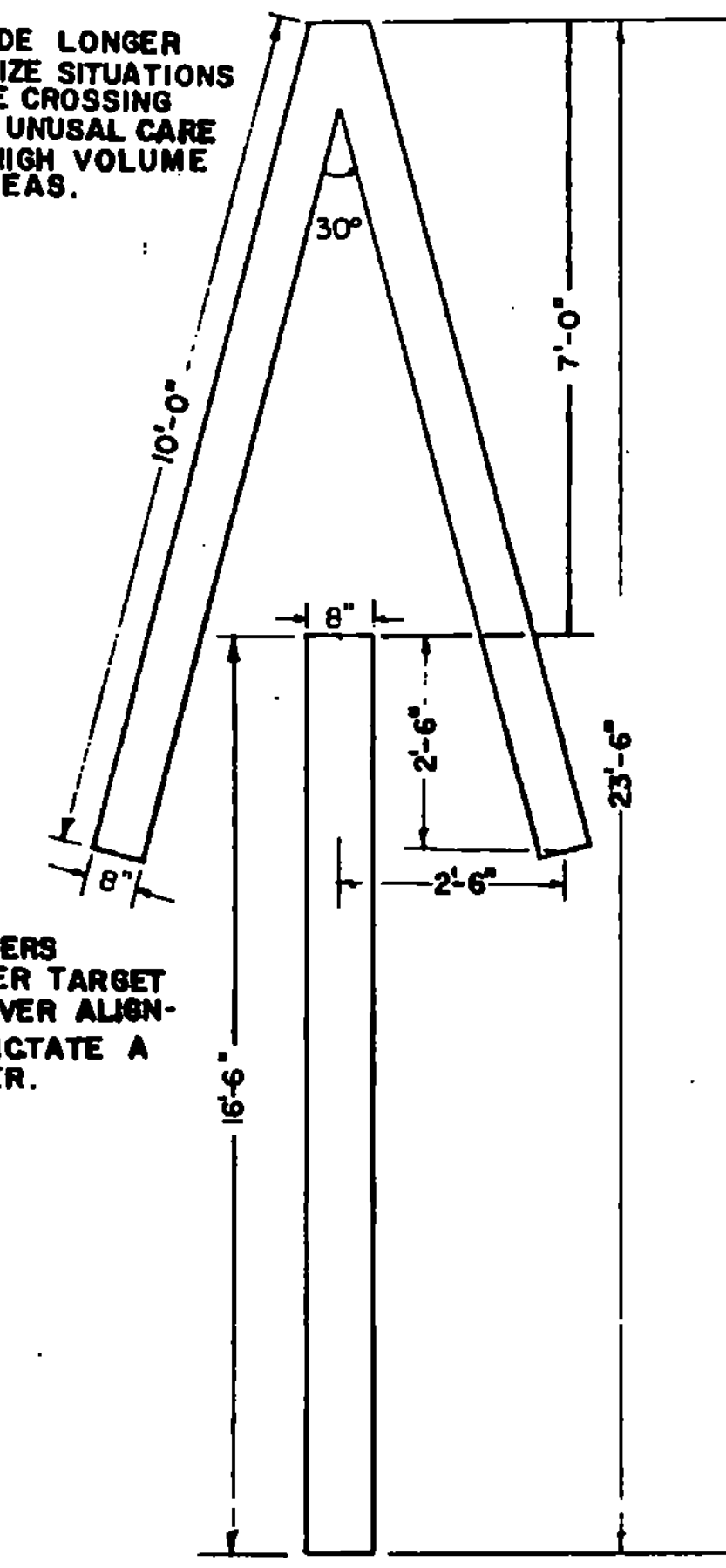


STANDARD
E-39

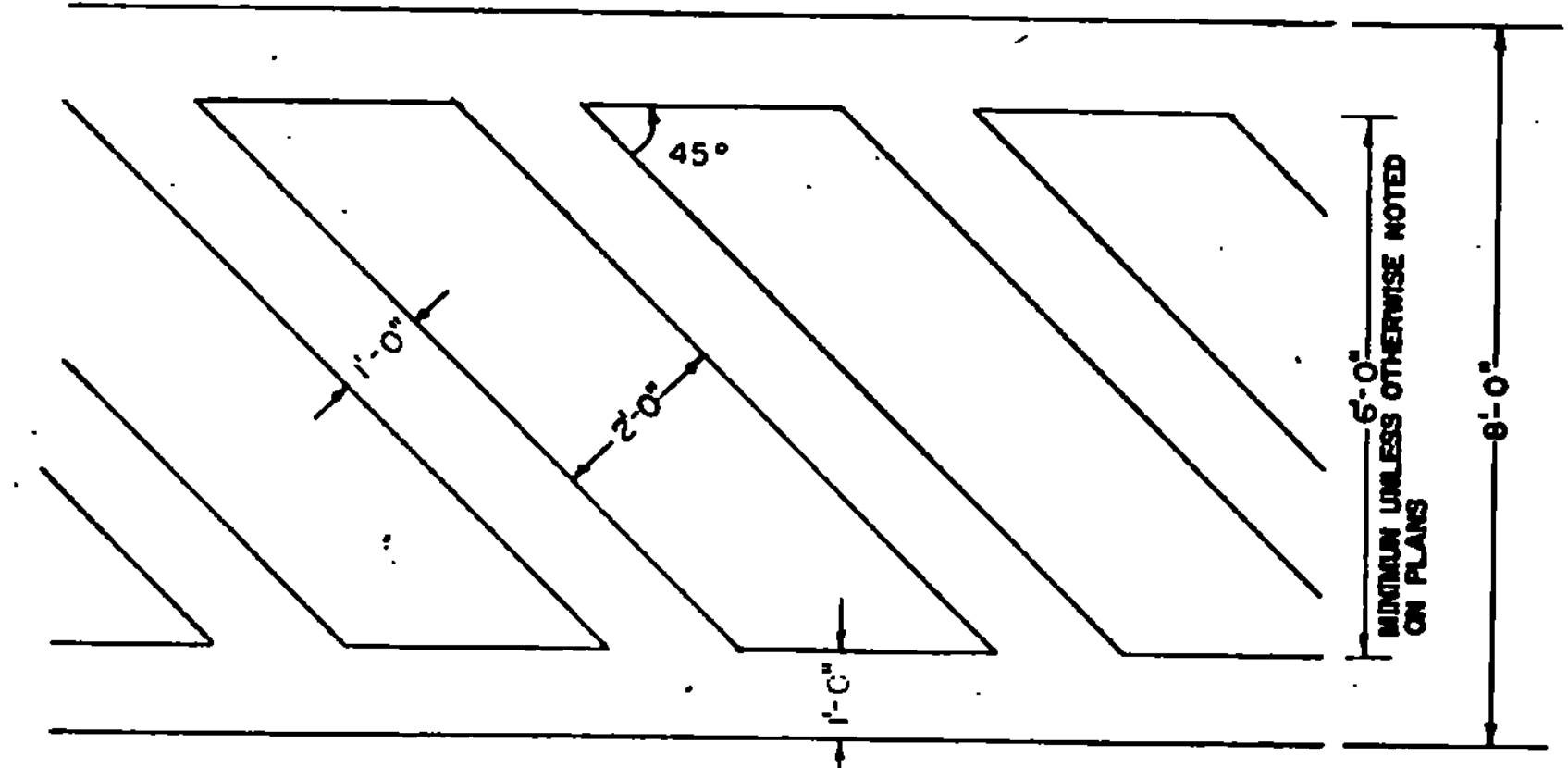


TRANSVERSE LINES SHALL CONSIST OF 8" WHITE LINES SPACED 5'-0" C-C AND SET AT 45° TO MAIN LINE EDGE LINES. THESE MARKINGS SHALL BE USED TO INCREASE VISIBILITY DUE TO DIFFICULT VERTICAL OR HORIZONTAL ALIGNMENT.

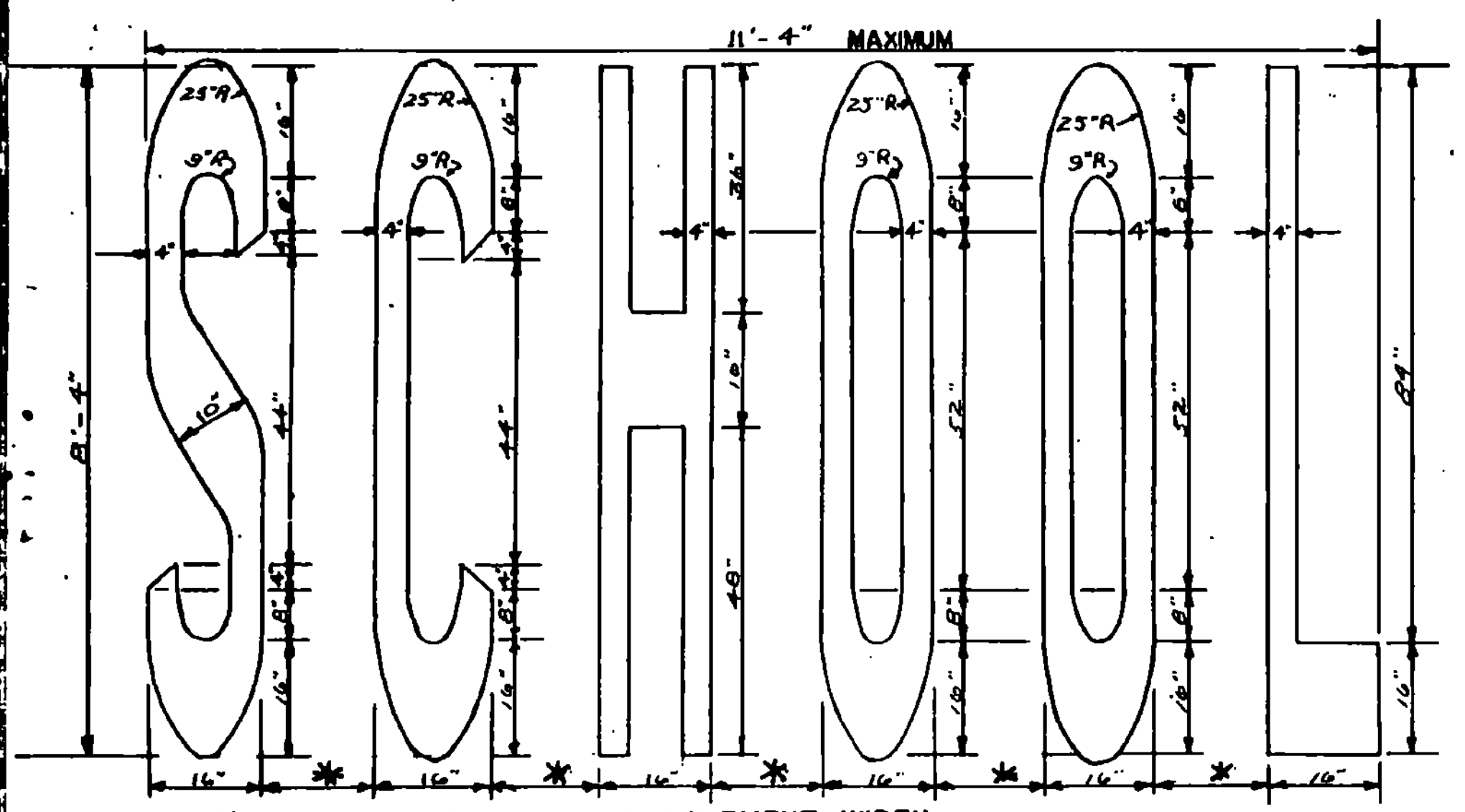
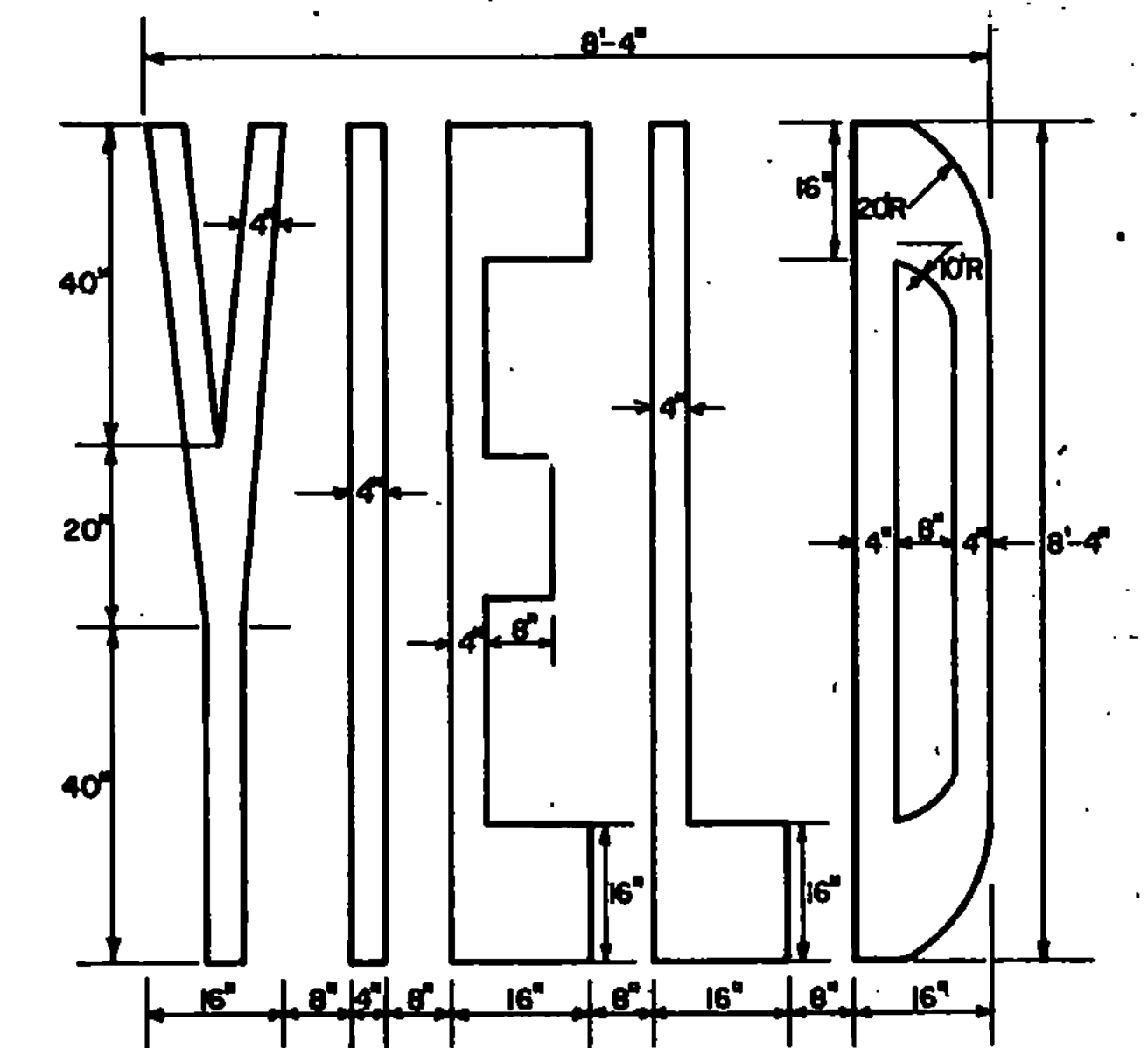
RAMP PAVEMENT ARROW DETAIL



CROSSWALK DETAIL



ARROWS AND WORD MARKINGS THAT CONFORM TO THE DIMENSIONS SHOWN ON THIS SHEET OR AS DETAILED IN THE BOOKLET ENTITLED 'THE STANDARD PAVEMENT MARKING ALPHABET AND SYMBOLS 1977' PREPARED BY THE FEDERAL HIGHWAY ADMINISTRATION WILL BE ACCEPTABLE.



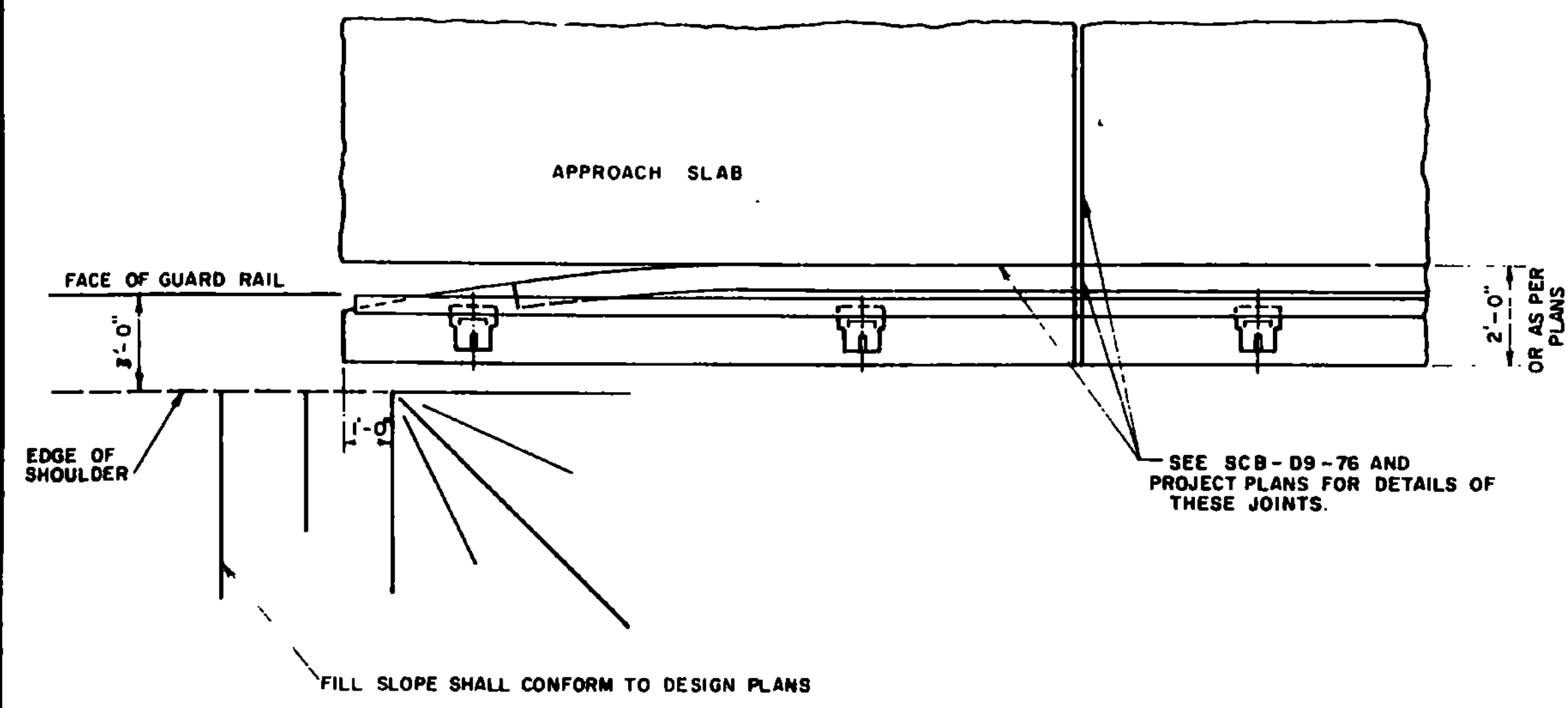
REVISIONS AND CORRECTIONS
MAR. 18, 1982 YIELD ADDED.
SEP. 20, 1985 REVISED GORE MARKINGS & "SCHOOL" SPACING
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED: **AUGUST 4, 1981**
DATE
S. J. Page
DIRECTOR OF ENGINEERING AND CONSTRUCTION
Ch. J. Long
CHIEF OF DESIGN
John L. Brown
TRANSPORTATION DESIGN ENGINEER

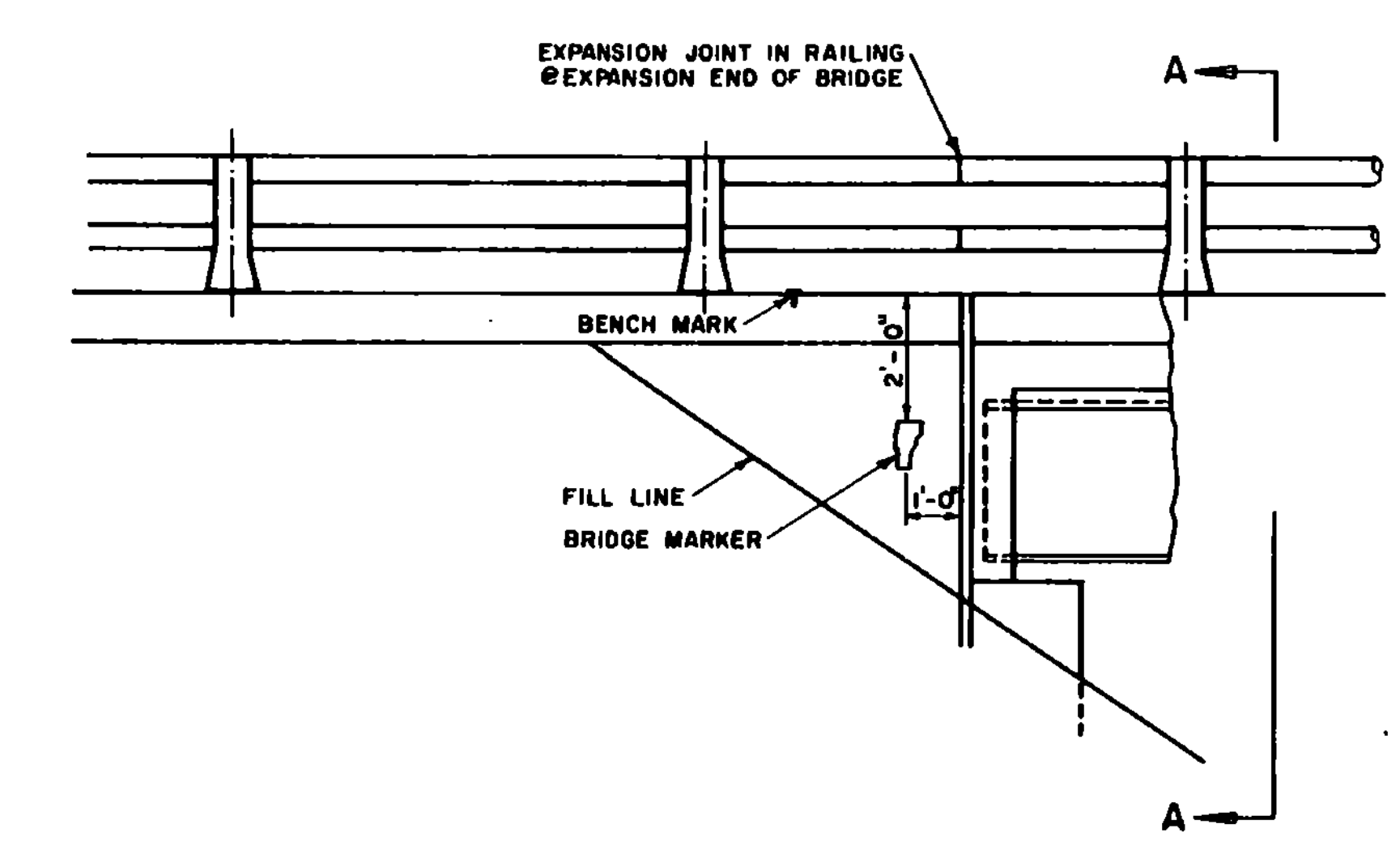
PAVEMENT MARKING DETAILS



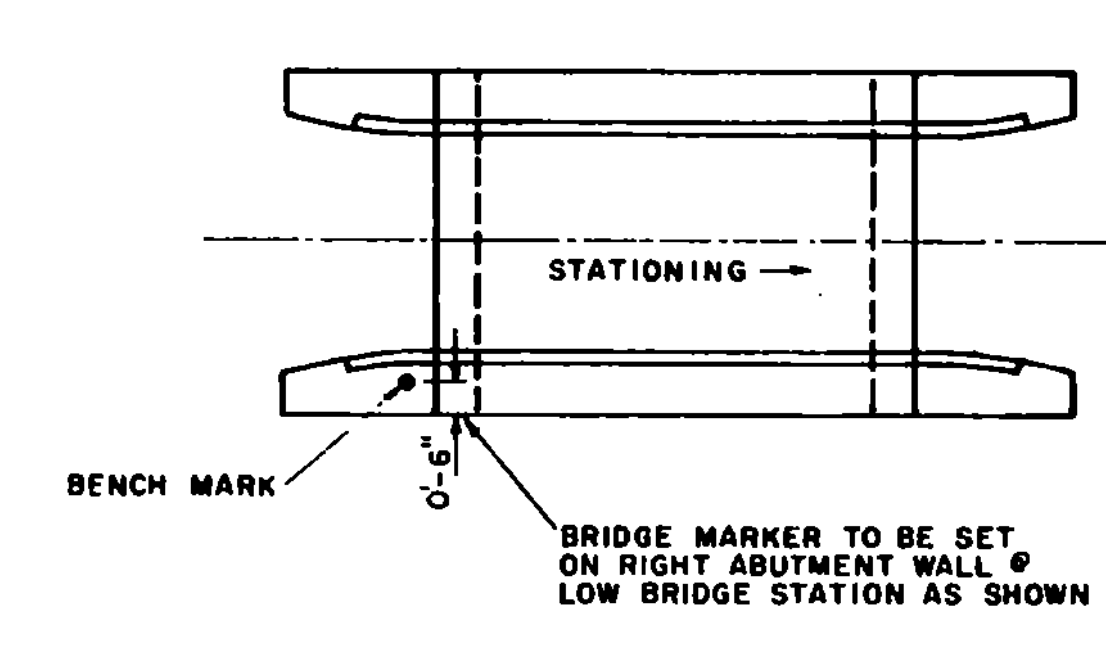
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PLAN AT ABUTMENT



ELEVATION AT ABUTMENT



SECTION A-A

GENERAL NOTES

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED MARCH 1976 AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1977 AND ITS LATEST REVISIONS. DESIGN IS FOR HS-20-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF AASHTO STANDARD SPECIFICATIONS.
- THE FOLLOWING NOTES SHALL APPLY UNLESS OTHERWISE NOTED ON PROJECT PLANS.
1. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A-588 (UNPAINTED). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A-325, TYPE III BOLTS IN 15/16" Ø HOLES. WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.
 2. WHEN NOT DETAILED ON THE PLANS, SIMPLE SPAN BEAMS SHALL BE CAMBERED FOR THE DEAD LOAD DEFLECTION PLUS ONE-EIGHTH (1/8) INCH FOR EACH TEN FEET OF SPAN OR FRACTION THEREOF. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK FOR ROLLED BEAMS AND AS INDICATED IN THE AWS SPECIFICATION FOR WELDED GIRDERS.
 3. ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO AWS D1.1-80 "STRUCTURAL WELDING CODE" AND ITS LATEST REVISIONS EXCEPT AS MODIFIED BY THE AASHTO STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, DATED 1981 AND ITS LATEST REVISIONS.
 4. ALLOWABLE DESIGN STRESSES:

CONCRETE: CLASS A	f'c	3,500 psi	fc	1400 psi
CLASS B	f'c	3,500 psi	fc	1400 psi
STRUCTURAL STEEL:				
A-588 MAX. DESIGN STRESS		27,000 psi (or as per AASHTO Specs)		
REINFORCING STEEL:				
DESIGN STRESS (TENSION)	GRADE 40	20,000 psi	GRADE 60	24,000 psi
DESIGN STRESS (COMPRESSION)		16,000 psi		20,000 psi
 5. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER FOR USE IN DETERMINING THE FINAL GRADE.
 6. MINIMUM COVER FOR REINFORCING STEEL (EXCEPT IN DECKS) SHALL BE 2" IN BACK FACES OF WALLS AGAINST EARTH AND 3" ELSEWHERE.
 7. ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND SUPERSTRUCTURE SHALL BE CHAMFERED 1" x 1".
 8. DECK CONCRETE SHALL BE CONCRETE CLASS A. ALL OTHER CONCRETE SHALL BE CONCRETE CLASS B.
 9. BRIDGE SEATS OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/2" PER FOOT EXCEPT UNDER BEARING PLATES WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FULL WIDTH. PIERS SHALL BE SLOPED EACH WAY FROM CENTER. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED.
 10. ABUTMENT CONCRETE ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL PREFERABLY NOT BE PLACED UNTIL FINAL FINISHED GRADE OF DECK IS ESTABLISHED BY THE ENGINEER.
 11. ANY FORM BRACKET HOLES IN FASCIA BEAMS OR GIRDER WEBS SHALL BE FILLED WITH BUTTON-HEAD OR HEX-HEAD BOLTS (TYPE III ON A-588 STEEL).
 12. GRANULAR BORROW USED IN AREAS THROUGH WHICH PILES ARE TO BE DRIVEN SHALL HAVE A MAXIMUM STONE SIZE OF NINE INCHES.
 13. BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND DO NOT WARRANT ACTUAL SUB-SURFACE CONDITIONS.
 14. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68° F.
- *NOTE: SPECIFICATIONS CALL FOR A CLASS A CONCRETE WHICH WILL PRODUCE 4000 PSI AT 28 DAYS. HOWEVER, SUPERSTRUCTURE CONCRETE IS DESIGNED ON THE BASIS OF f'c = 3500 THUS PROVIDING AN ADDITIONAL FACTOR OF SAFETY IN BRIDGE SLABS.
15. IF ALL DECK CONCRETE IS NOT PLACED IN ONE WORKING DAY, A MINIMUM DELAY PERIOD OF 96 HOURS (FOLLOWING END OF PLACEMENT OF THE PREVIOUS CONCRETE) WILL BE REQUIRED BEFORE PLACING ADDITIONAL CONCRETE. THE MINIMUM DELAY PERIOD SHALL BE INCREASED WHEN SO ORDERED BY THE ENGINEER. IN ALL CASES THE PLACEMENT SEQUENCE INDICATED ON THE PLANS SHALL BE FOLLOWED.
 16. REINFORCING PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

SPACING TOLERANCE:	± 1/4"
CLEARANCE TOLERANCE:	± 1/4"

REVISIONS AND CORRECTIONS 1- Added word seat in line 3 of Note #9 J.WOOD 4-23-75 2. CHANGED VERMONT SPEC. DATE, GEN. NOTE, AND ADDED NOTE NO. 15, W. TRIPP 4-26-76. 3. REVISED NOTES, W. TRIPP, 12-18-76. 4. REVISED DATES, NOTE NO. 3 W. TRIPP 4-25-77 5. REVISED NOTES W. TRIPP 4-3-78 6. REVISED NOTE NO. 3, DATES W. TRIPP 9-14-81		APPROVED _____ DATE 9-14-81 CHIEF ENGINEER _____ ASST. CHIEF ENGINEER _____ BRIDGE ENGINEER _____
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DETAILS OF W BEAM BRIDGES
GENERAL INFORMATION
AND
GENERAL NOTES

VERMONT DEPARTMENT OF HIGHWAYS STANDARD	SCB-DI-75
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