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Date OCT 27 1987

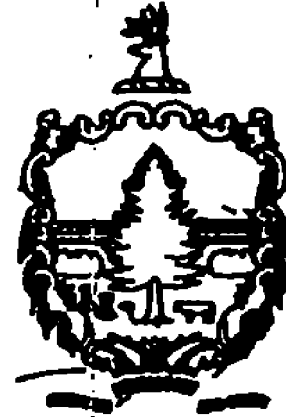
FRANK W. Whitcomb CONSTRUCTION CORPORATION  
Contractor

[Signature]  
Signature

[Signature]  
Title  
Transportation Secretary's Signature

CONVENTIONAL SIGNS	
COUNTY LINE	---
TOWN LINE	- - - -
LIMITS OF ACCESS	○ ○ ○ ○
POINT OF ACCESS	○ ○ ○ ○ X
FENCE LINE	— X — X — X
STONE WALL	○○○○○○○○○○○○○○
TRAVELED WAY	— — — — —
GUARD RAIL	— A — A — A
RAILROAD	— + — + — +
SURVEY LINE	— + — + — +
CULVERT	— + — + — +
POWER POLE	— + — + — +
TELEPHONE POLE	— + — + — +
TREES	● * ○
CONTROL OF ACCESS	— / — / — /
PROPERTY LINE	— — — — —
R.O.R. TAKING LINE	— — — — —
SLOPE RIGHTS	— — — — —
TOP OF CUT	— — — — —
TOE OF SLOPE	— — — — —

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.

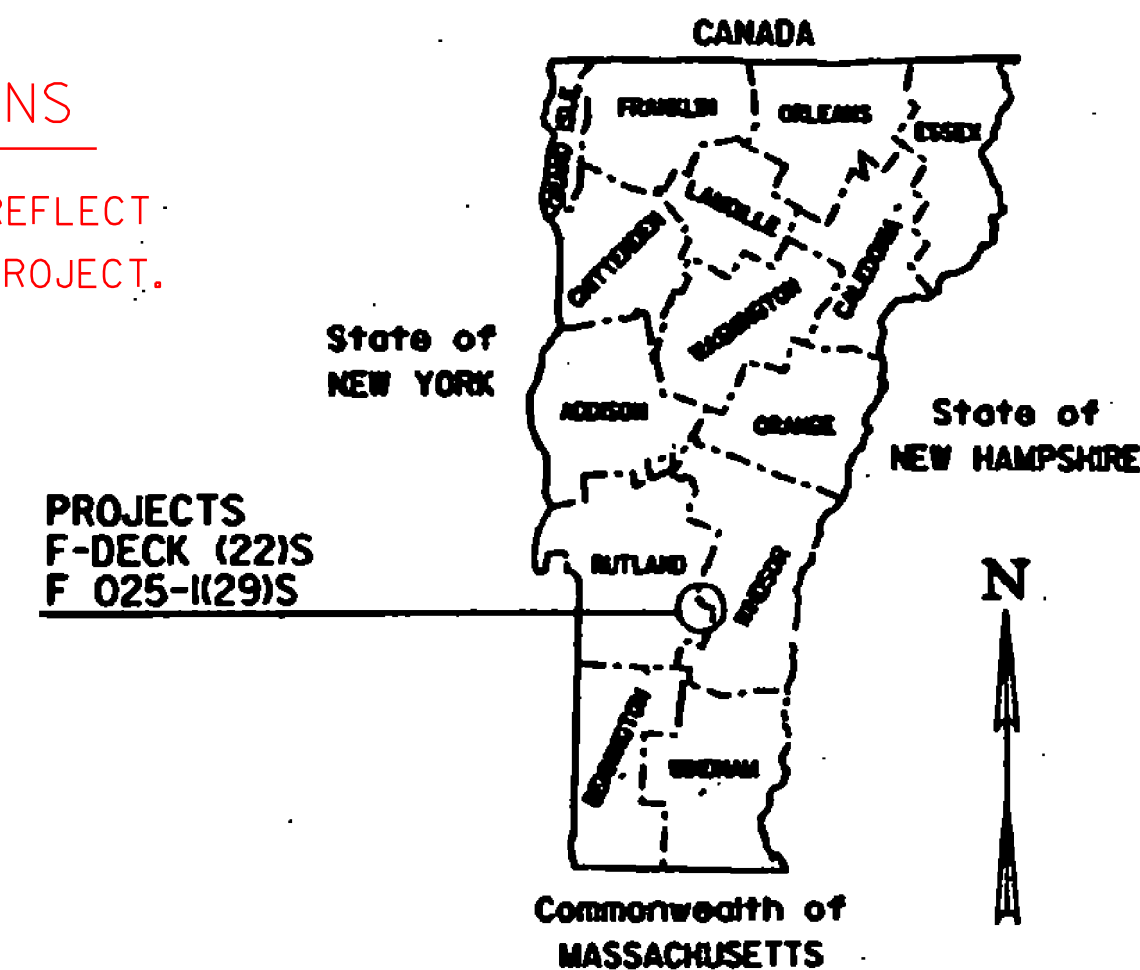
LENGTH OF F 025-1(29)S : 1.197 MILES  
6320 FEET

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

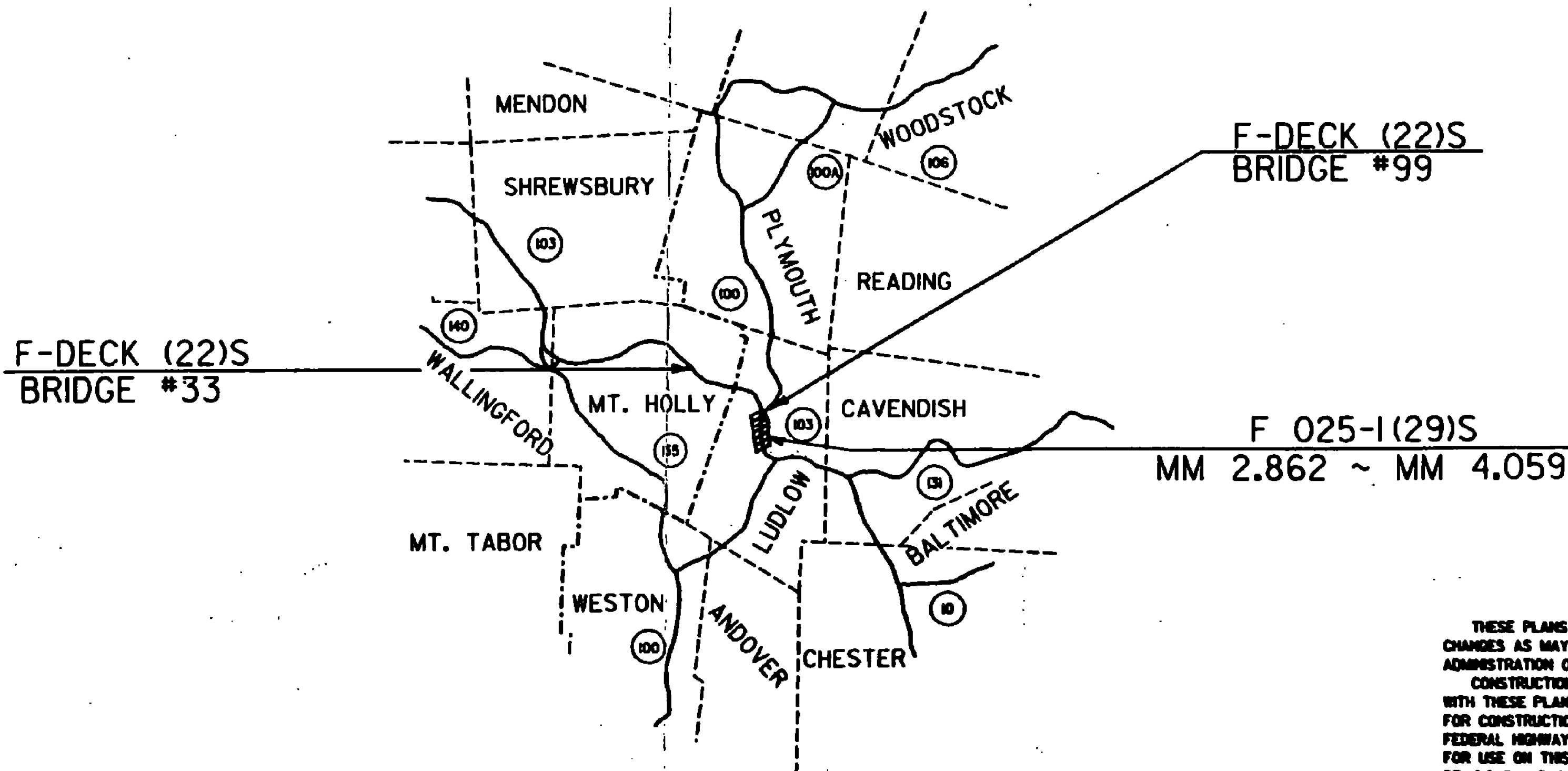
TOTAL LENGTH OF STRUCTURES = 168.51'

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 1984, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON NOVEMBER 24, 1983 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 <u>David P. Kelley</u> DATE <u>7/14/87</u>	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	

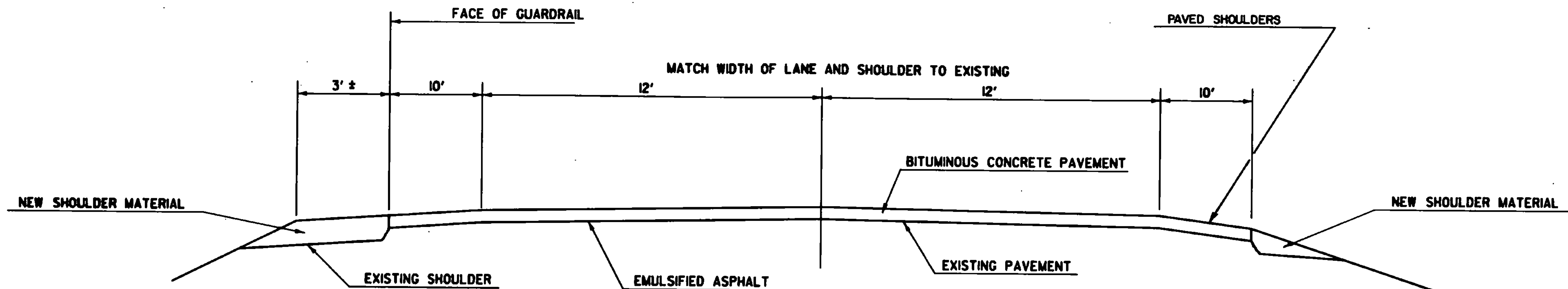




# TYPICAL SECTIONS 1986 PAVING PROGRAM

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.



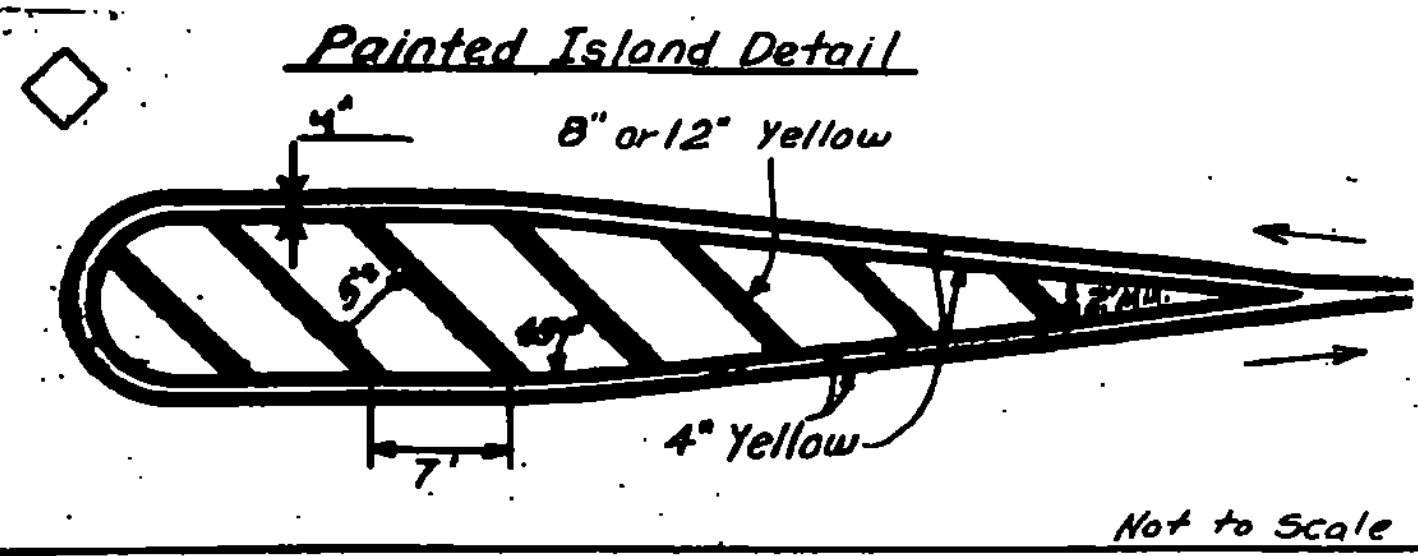
ROUTE VT 103 MILE 2.862 TO 4.059 MILE

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

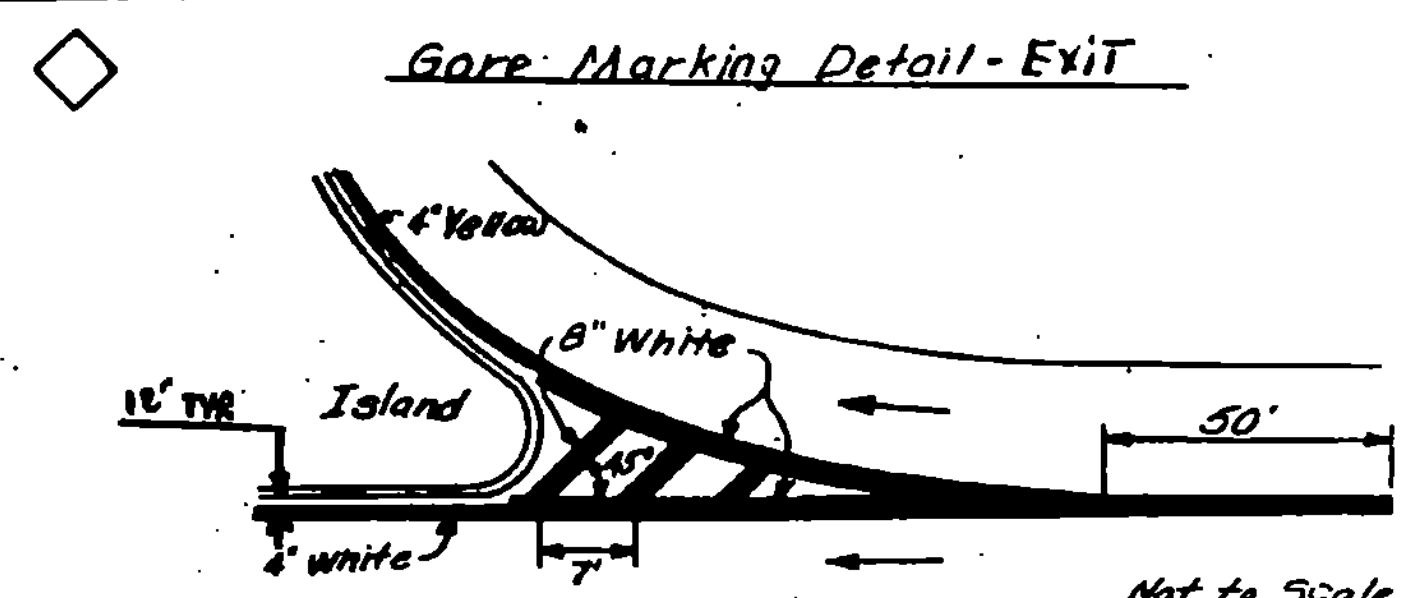
SURVEYED BY	DATE
DRAWN BY REDMOND	DATE 8-88
TRACED BY	DATE
LUDLOW	
PROJ. F	NO. 025-1(2)93
SHEET 3	OF 40

DRAWING SCALE

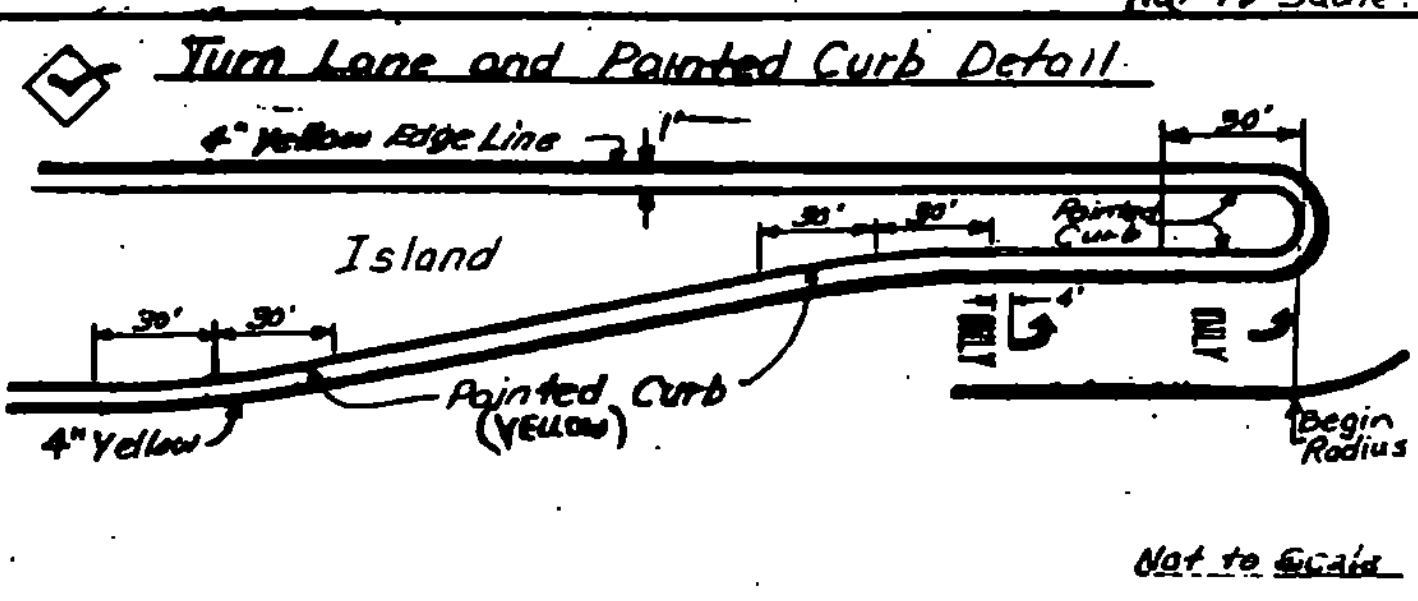




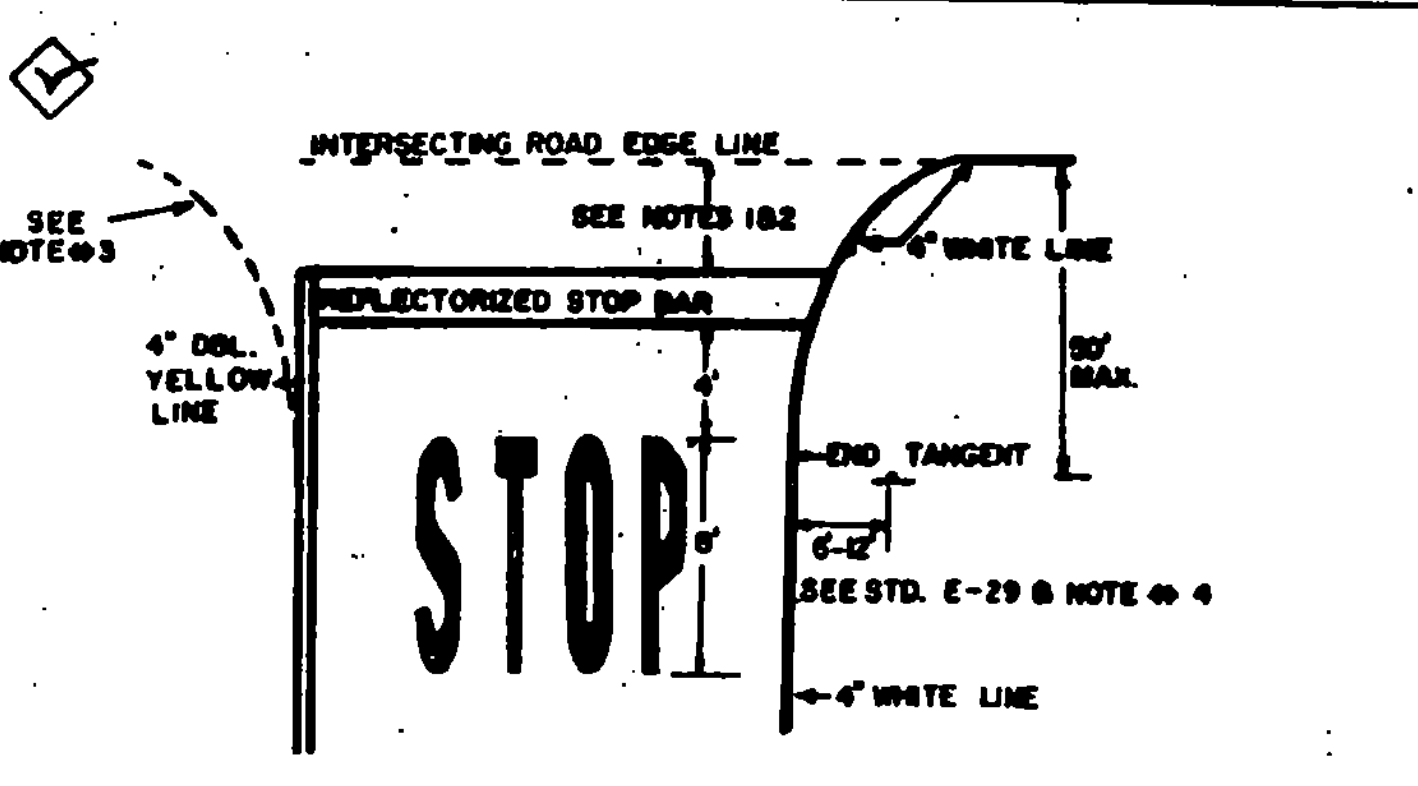
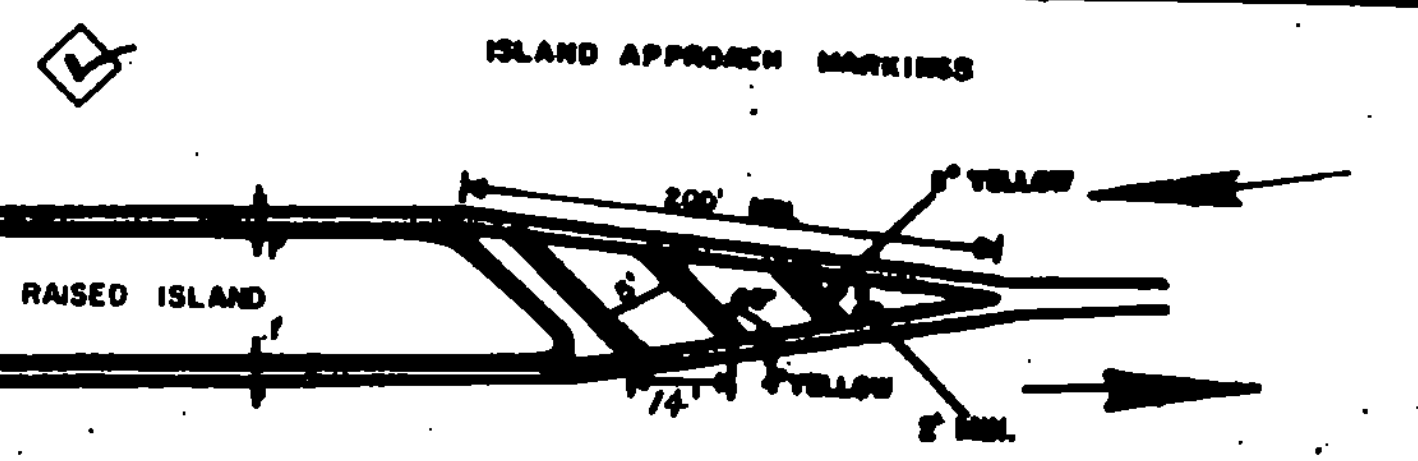
Not to Scale



Not to Scale



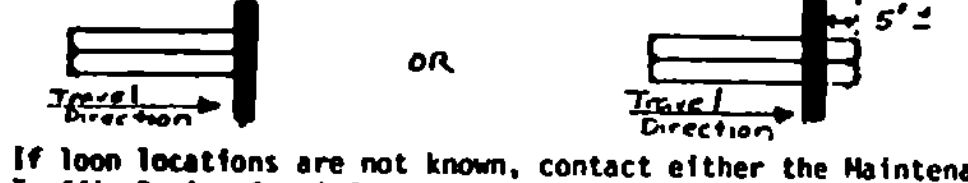
Not to Scale



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 "X" ASSEMBLY ON EACH SIDE OF THE RAMP. A TYPE "X" ASSEMBLY CONSISTS 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 66:1 (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

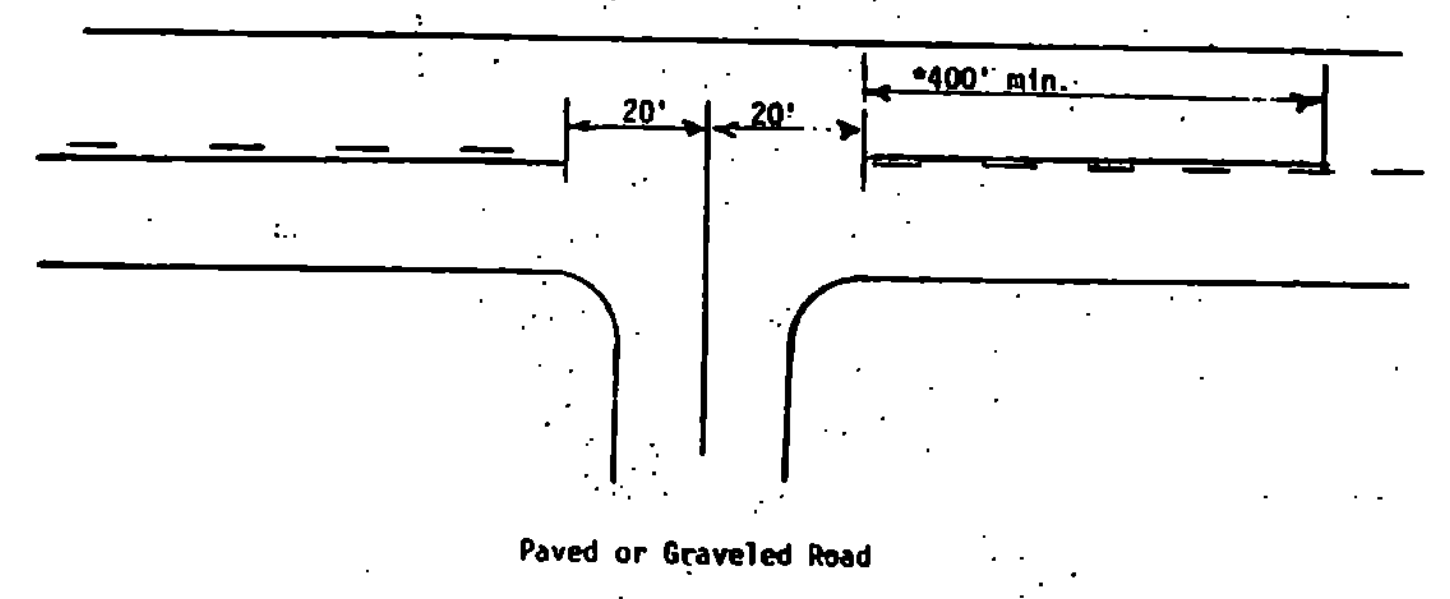
GUIDELINES FOR MINIMUM INTERIM PAVEMENT MARKINGS IN CONSTRUCTION ZONES

- 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 PRINT, 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 PIGHT 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

APPROACH TO A SIDE ROAD INTERSECTION

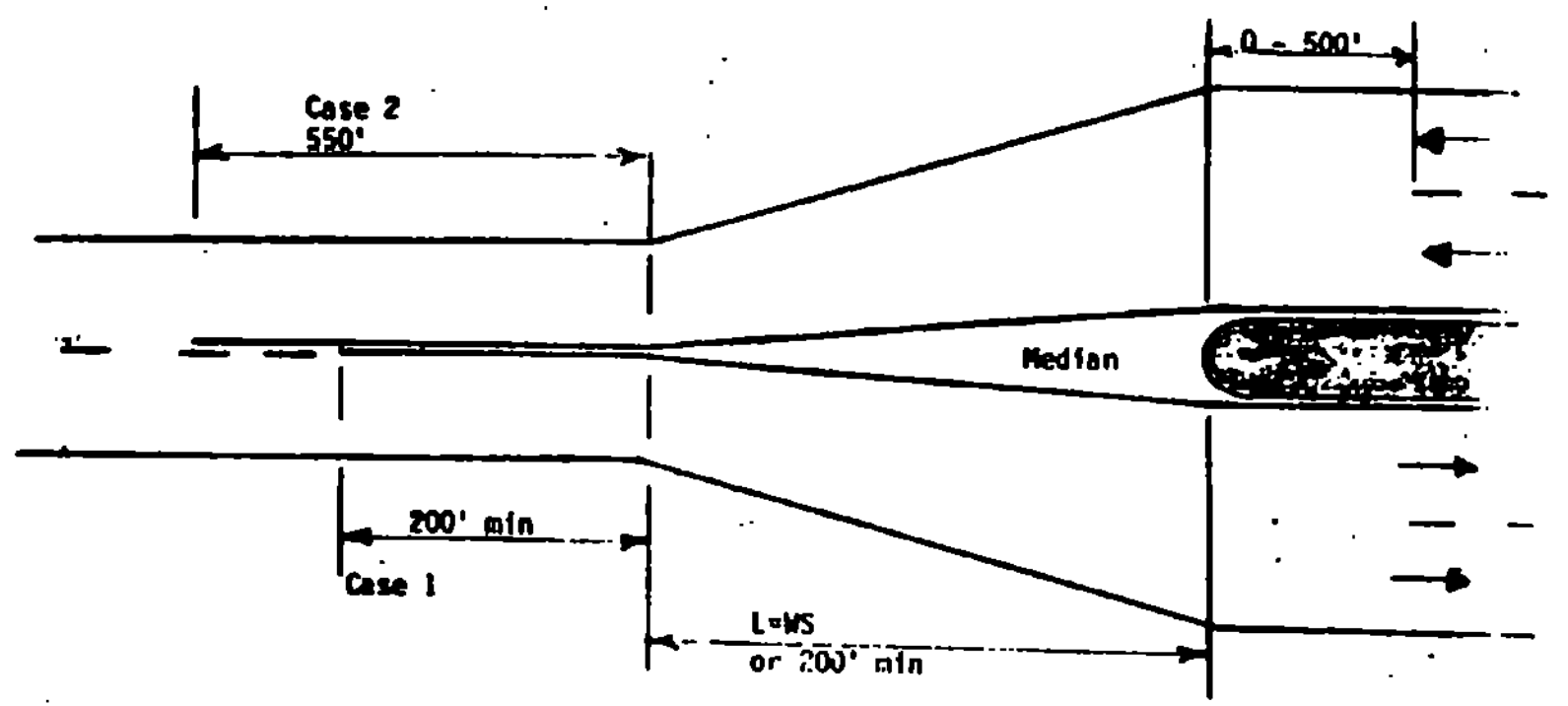
A solid line in the direction of travel is begun at a location 400 feet in advance of the intersection. This distance is measured from a point 20 feet in advance of the centerline of the intersecting roadway.



\* 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 opposite lane.

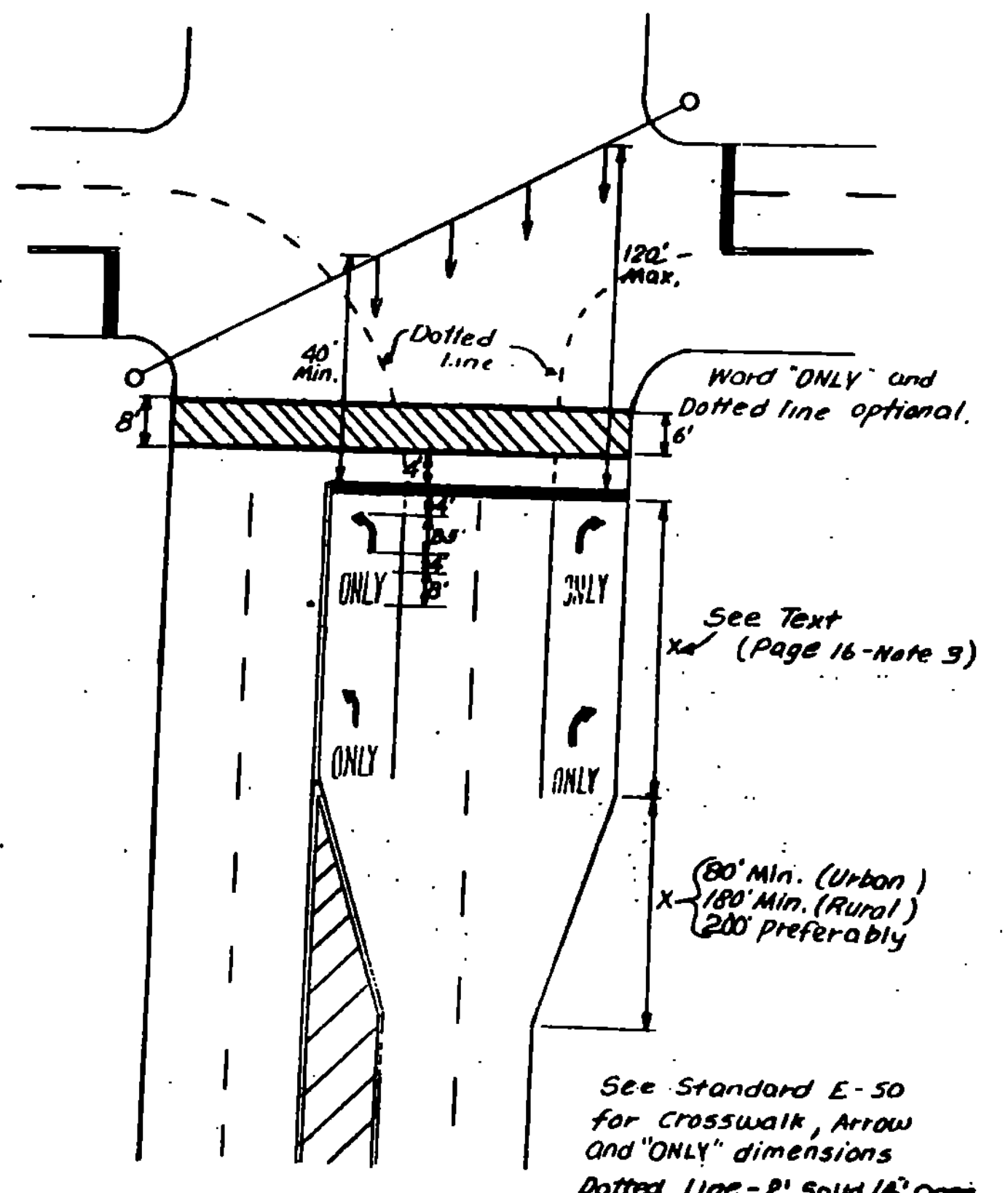
PAVEMENT WIDTH TRANSITIONS

- 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.)  
 M = Offset Distance (ft.)  
 S = Speed Limit (mph)

Typical Markings For Signalized Intersection

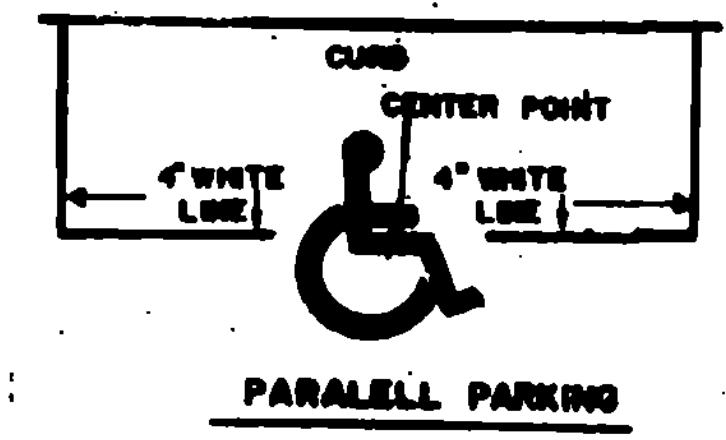
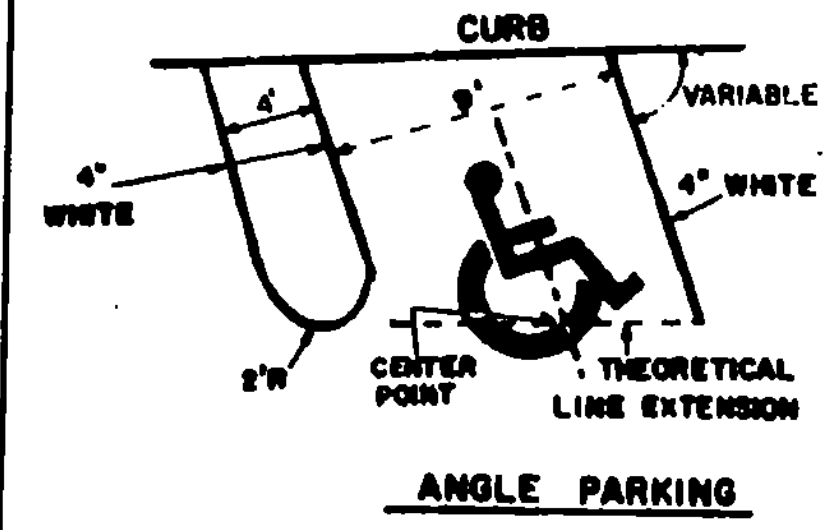
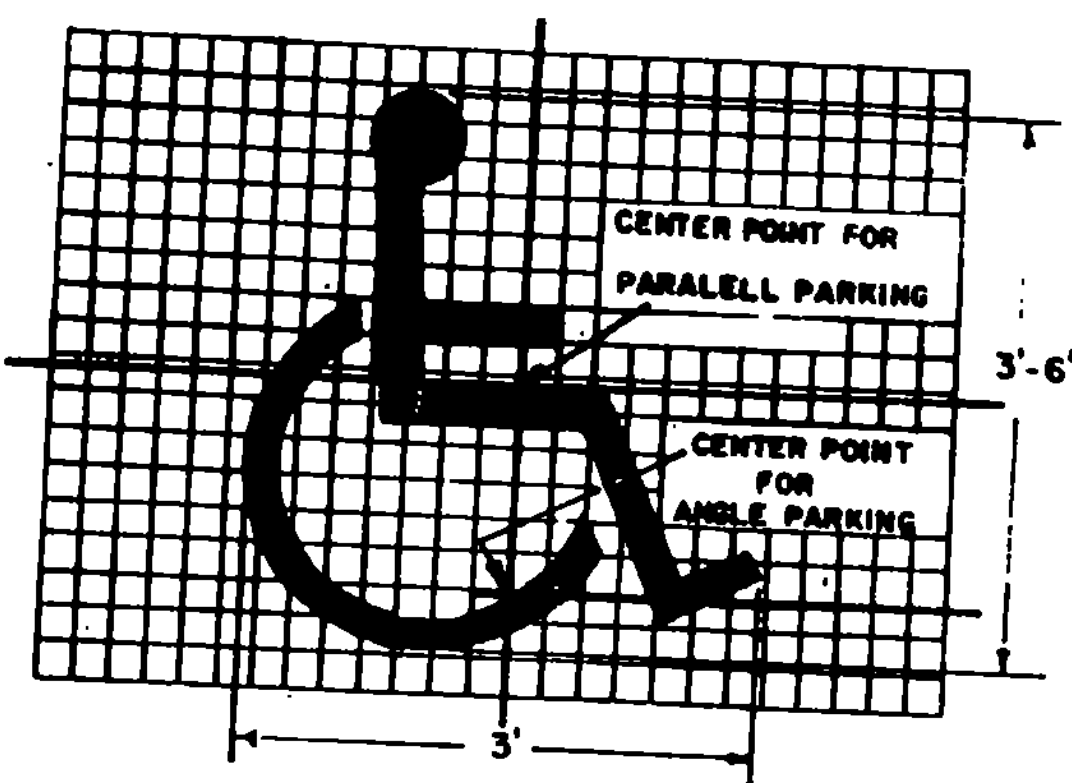


See Text  
x (Page 16-Note 3)

(80' Min. (Urban)  
 x (180' Min. (Rural))  
 (200' preferably)

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

HANDICAPPED PAVEMENT MARKING DETAILS



LEGEND

☑ TO BE USED WITH THIS PROJECT

PAVEMENT MARKING DETAILS

SURVEYED BY _____	DATE _____
DRAWN BY _____	DATE _____
TRACED BY _____	DATE _____
LUDLOW	
PROJ. F NO. 025-1(29)S	
TRAFFIC SHEET NO. _____ 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, REPAIRING 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, REPAIRING 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.

<b>STATE OF VERMONT</b>	
<b>AGENCY OF TRANSPORTATION</b>	
Town Of <b>LUDLOW-MT. HOLLY</b>	Bridge No. _____
Highway No. <b>VT.100&amp;VT.103</b>	Log Sta. _____
<b>DECK REHABILITATION GENERAL</b>	
<b>NOTES</b>	
Designed By <b>G.S. ROGERS</b>	Drawn By <b>D.W. NEWTON</b>
Checked By _____	Date _____
<b>G.S. ROGERS</b>	<b>6/87</b>
PROJECT <b>LUDLOW - MT. HOLLY</b>	
PROJECT NO. <b>F-DECK (22)S</b>	
L&C. Info. <b>OSAIL30321DECKNOTE1</b>	
Bridge Sheet No. _____	Sheet <b>3</b> of <b>40</b>

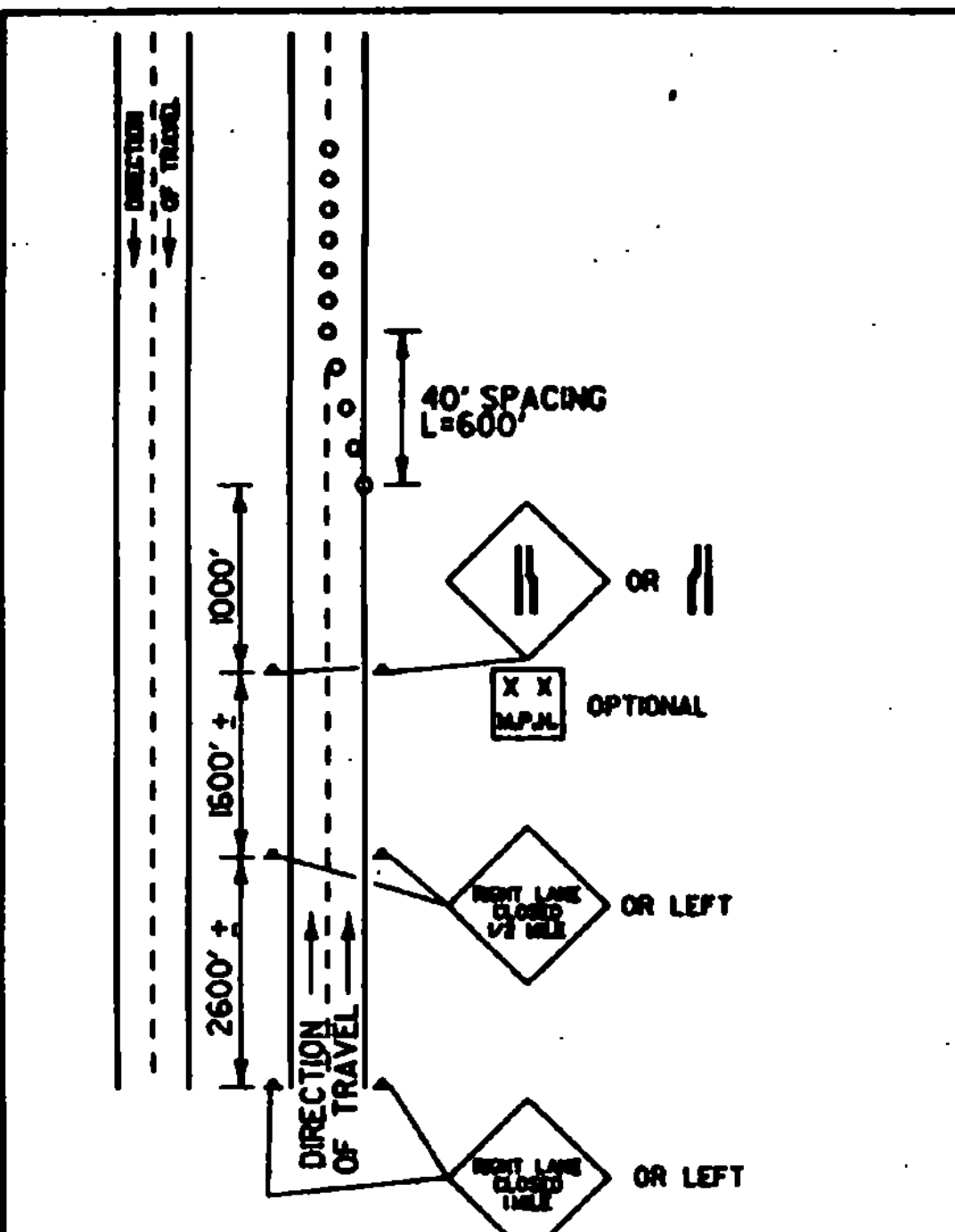
GENERAL NOTES (CONT'D.)

- 27 ALL JOINTS IN THE GRANITE CURBS SHALL BE REPOINTED WITH 'MORTAR, TYPE I' AS DETERMINED BY THE ENGINEER, AS PER SHEET 23. 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.

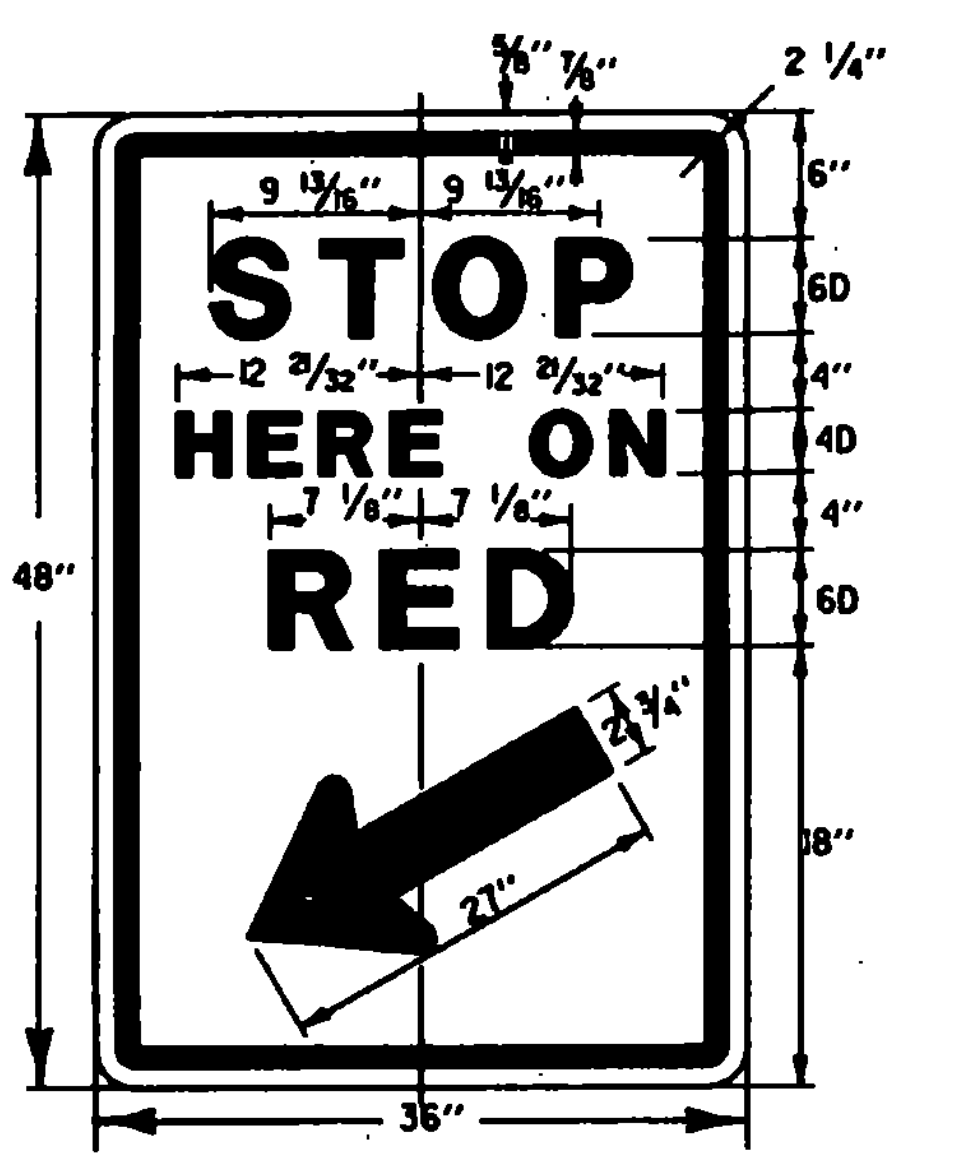
- 33 OVERLAY INFORMATION: IF, UPON REMOVAL OF THE PAVEMENT AND MARKING OF AREAS NEEDING REPAIR ON THE DECK, THE ENGINEER DETERMINES THAT AN OVERLAY IS DESIRED, THEN THE FOLLOWING NOTES SHALL APPLY AND PRICES FOR 501.45 (MOD.), AND 501.46 (MOD.), SHALL BE 90% OF THE BID PRICE FOR THAT BRIDGE.
- A. THE 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.

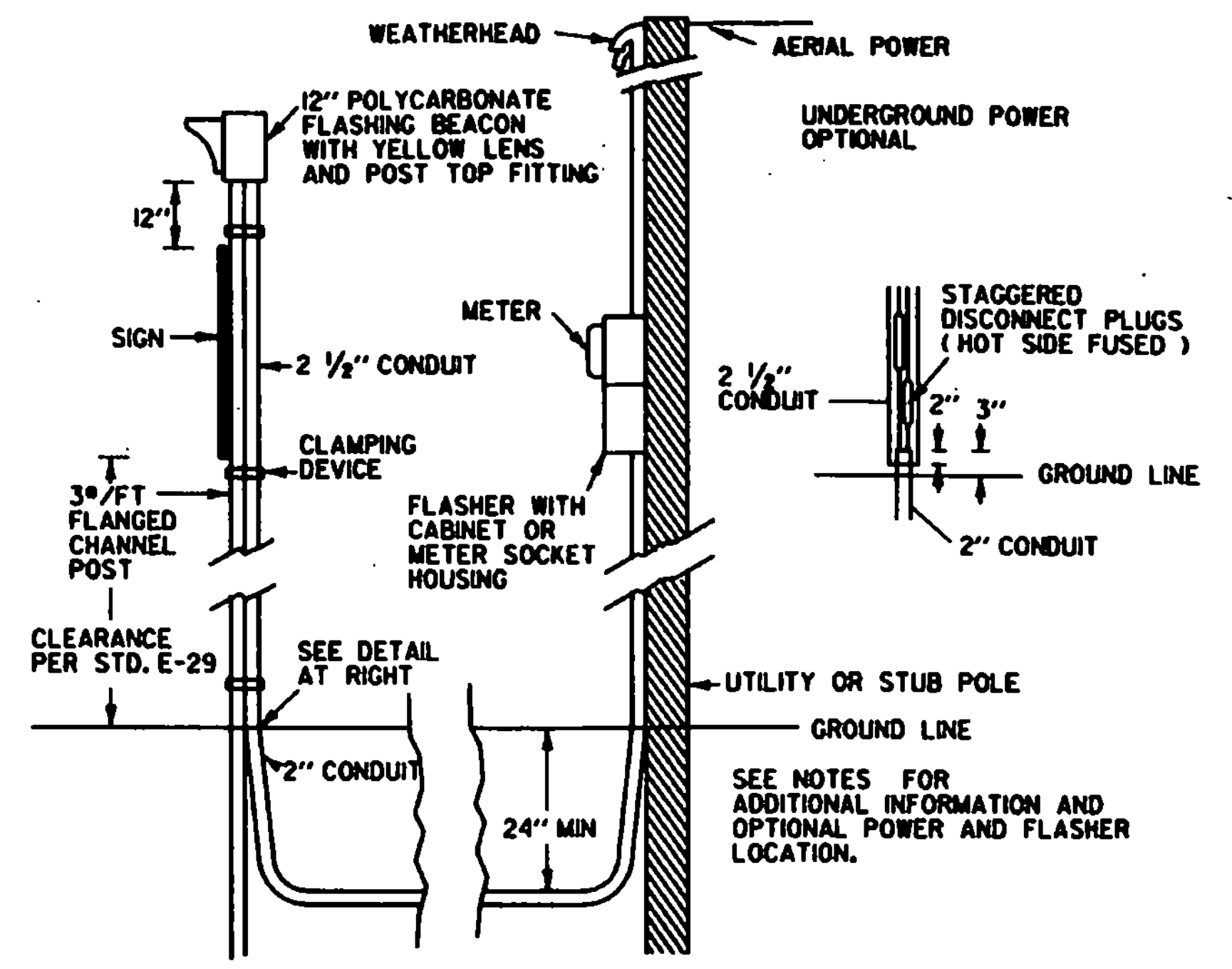
<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b>			
Town Of	LUDLOW-MT. HOLLY	Bridge No.	_____
Highway No.	VT. 100 & VT. 103	Log Sta.	_____
		Surv. Sta.	_____
<b>DECK REHABILITATION GENERAL</b>			
<b>NOTES</b>			
Designed By	B.S. ROGERS	Drawn By	D.W. NEWTON
Checked By	G.S. ROGERS	Date	6/87
		Bridge Design Supervisor	R.L. OATLEY
PROJECT	LUDLOW-MT HOLLY	PROJECT NO.	F- DECK (2) S
L.C. Info.	3FA1E30.321 DECKNOTE 2		
Bridge Sheet No.		Sheet	8 of 40



TRAFFIC CONTROL FOR A HIGHWAY UNDER BRIDGE WORK, WHERE DERRIS MAY FALL ON THE HIGHWAY BELOW AND LANE CLOSURE IS NECESSARY, AS DIRECTED BY THE ENGINEER, PAYMENT SUBSIDIARY TO OTHER ITEMS.



SEE STD. E-15 FOR MATERIALS AND COLORS



FLASHING BEACON DETAIL

PHASING DIAGRAM AND SPECIAL NOTES FOR EACH LOCATION

**SIGNAL PHASING DIAGRAM**

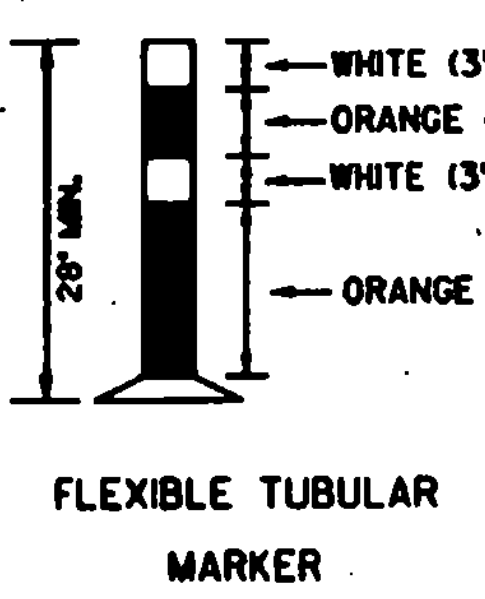
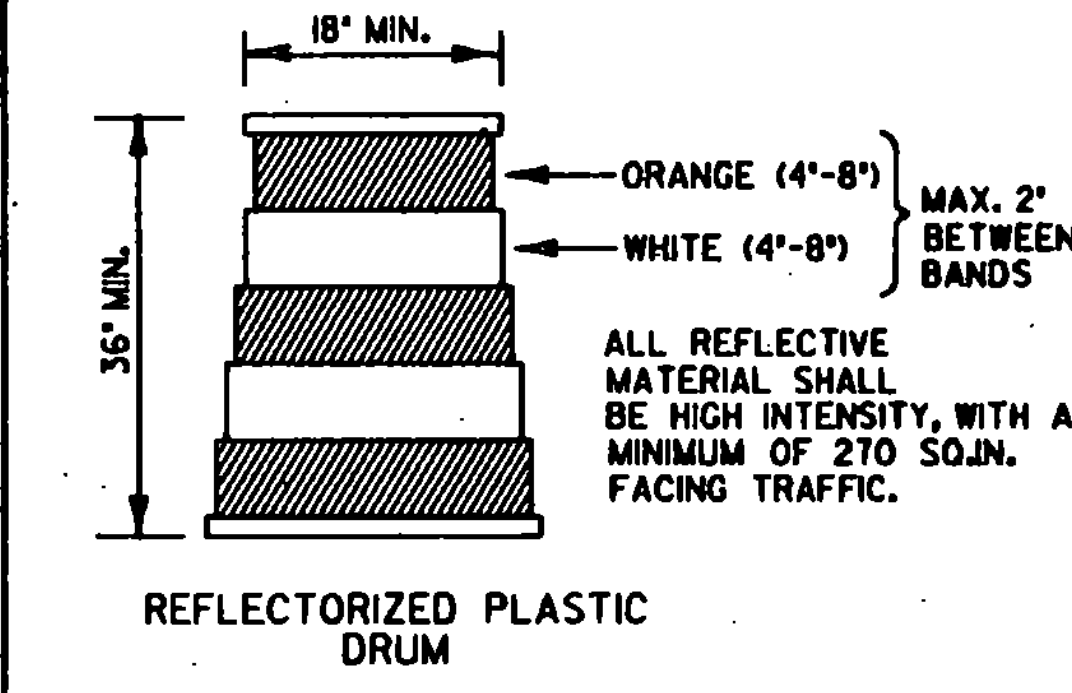
PHASE	A						B (Dwell)					
	1	2	3	4	5	6	1	2	3	4	5	6
INTERVAL	12	-	-	-	-	-	-	-	-	-	-	-
MINIMUM	2	-	-	-	-	-	-	-	-	-	-	-
EXTENSION	18	3	14	18	3	14	18	3	14	18	3	14
HEAD A	G	Y	R	R	R	R						
HEAD B	R	R	R	G	Y	R						

Eastbound ← Westbound →

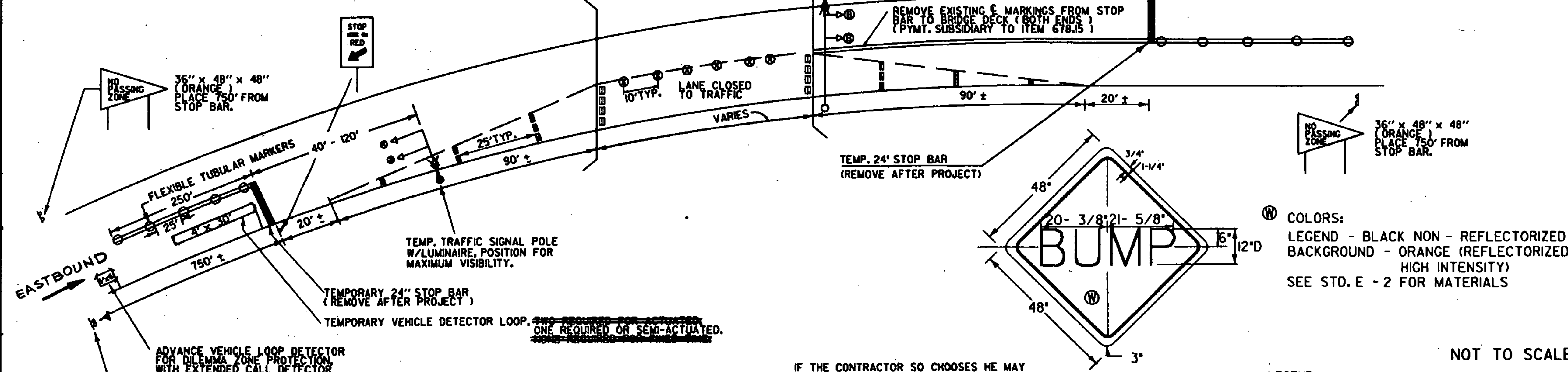
Semi-actuated loop in eastbound lane (PHASE A) - install advance loop in eastbound lane 300'± from stop bar

See traffic sheets #2 & 3 for Ludlow bridge #99.

- GENERAL**
- TEMPORARY TRAFFIC SIGNAL NOTES**
- THE CONTRACTOR SHALL INSURE THAT THE SIGNAL INSTALLATION CONFORMS TO THE MANUFACTURER'S INSTRUCTIONS AND THE SUPPORTING STRUCTURES AS PER THE STANDARD TRAFFIC CONTROL MANUAL FOR HIGHWAY SIGNALS.
  - SIGNAL TIMING/TIMING ADJUSTMENTS REQUESTED BY THE RESIDENT ENGINEER SHALL BE ACCOMPLISHED WITHIN A 48 HOUR PERIOD AND PAYMENT SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL. ITEM THE ALL-RED CLEARANCE INTERVAL IS BASED ON AN ASSUMED SPEED OF 15 MPH. THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.
  - SIGNAL FACES SHALL CONSIST OF 12 LENSES (RED, YELLOW, AND GREEN).
  - THE BOTTOM OF THE MOUNTING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 18 FEET NOR MORE THAN 19 FEET ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY. THE BOTTOM OF A SIGNAL FACE NOT MOUNTED OVER A ROADWAY, SHALL NOT BE LESS THAN 8 FEET NOR MORE THAN 15 FEET ABOVE THE GROUND. CAUTION SHOULD BE USED TO INSURE COMPLIANCE WITH THE HEIGHT REQUIREMENTS IN THE EVENT THE NEW APPROACH GRADES DIFFER SIGNIFICANTLY FROM THE OLD ROAD GRADE.
  - SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 6 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.
  - SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNSTABLY IN LINE WITH THE CENTER OF APPROACHING TRAFFIC AT ALL TIMES. THE SECOND SIGNAL HEAD MAY BE POST MOUNTED, LOCATED AT A DISTANCE NO GREATER THAN 14 FEET FROM THE CENTER OF THE APPROACH LANE WHEN THE STOP BAR IS 40 FEET FROM THE SIGNAL HEAD. CONSULT THE M.U.T.C.D. FOR ADDITIONAL INFORMATION CONCERNING SIGNAL PLACEMENT.
  - SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.
  - THE SIGNAL SYSTEM SHALL CONSIST OF POLES, SIGNS AND POSTS, TEMPORARY PAVEMENT MARKINGS (AND REMOVALS) AND SIGNAL EQUIPMENT TO PROVIDE FOR AN ADEQUATE DESIGN. IT ALSO INCLUDES PERMITS AND COST ASSOCIATED WITH PROVIDING ELECTRICAL POWER.
  - THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE INDICATED. THE CONTROLLER, VEHICLE DETECTORS AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.
  - VEHICLE DETECTOR LOOPS SHALL BE 4' x 30' FOR PRESENCE DETECTION AT THE STOP BAR WITH THE NEAR PORTION LOCATED 3 FEET BEHIND THE STOP BAR. A 6' x 6' EXTENDED CALL DETECTOR SHALL BE PROVIDED IF REQUIRED IN THE SPECIAL NOTES. LOCATE 330' FROM STOP BAR OR AS NOTED, FOR DILEMMA ZONE PROTECTION.
  - ON SEMI-ACTUATED SIGNALS, PARTICULARLY WITH LONG BRIDGES, THE CONTROLLER SHOULD BE LOCATED ON THE SAME SIDE OF THE BRIDGE AS THE LOOP.
  - INTERVAL TIMING SHOWN IN SECONDS.
  - INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT.
  - PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.
  - POLES SUPPORTING SPAN WIRES AND/OR MAST ARMS SHALL BE ADEQUATELY BRACED OR GUYED AND SHALL NOT BE PLACED SO AS TO CREATE A HAZARD TO THE TRAVELING PUBLIC.
  - ALL TEMPORARY SIGNAL EQUIPMENT, SIGNS, ETC., SHALL BELONG TO THE CONTRACTOR AT THE END OF THE PROJECT AND HE SHALL BE RESPONSIBLE FOR THEIR REMOVAL, INCLUDING ANY TEMPORARY PAVEMENT MARKINGS, UTILITY POLES, WIRES, ETC.
  - A 400 WATT MER/200 WATT HPS LUMINAIRE AND MAST ARM SHALL BE PROVIDED ON A POLE ON EACH APPROACH AT A MOUNTING HEIGHT OF 30' ABOVE ROADWAY CENTERLINE. THE INTENT IS TO LIGHT UP THE AREA AROUND THE SIGNAL HEADS AND STOP BAR FOR INCREASED VISIBILITY. THE RESIDENT ENGINEER SHALL DETERMINE THE ADEQUACY OF THE LIGHTING AND DIRECT CHANGES IF THE LIGHTING IS INSUFFICIENT.
  - STOP BARS SHALL BE LOCATED A MINIMUM OF 40' AND A MAXIMUM OF 120' FROM THE NEAREST SIGNAL HEAD.
  - PAYMENT FOR TEMPORARY VEHICLE DETECTOR LOOPS SHALL BE LINEAR FOOT OF SAWSLIT IN THE PAVEMENT ITEM 678.22 (MODIFIED L).
  - TEMPORARY PAVEMENT MARKINGS (AND REMOVALS) AND SIGNING AS SUBSIDIARY TO THE ITEM 678.22 TRAFFIC CONTROL SIGNALS (STOP BARS, "STOP HERE ON RED", "SIGNAL AHEAD", "NO PASSING ZONE", "NO TURN ON RED").
  - SEE THIS SHEET FOR "STOP HERE ON RED" SIGN DETAIL AND E-98 FOR "SIGNAL AHEAD" SIGN DETAIL. THE "SIGNAL AHEAD" SIGN SHALL HAVE AN ORANGE BACKGROUND (REFLECTORIZED). SEE STANDARD E-29 FOR SIGN PLACEMENT. SEE STANDARD E-35 FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS. SEE STD. E-15 FOR "NO TURN ON RED" SIGN DETAIL.
  - A "SIGNAL AHEAD" SIGN SHALL BE PLACED AT LEAST 750' FROM THE SIGNAL OR AT A POSITION TO BE DETERMINED BY THE ENGINEER. ALL POST, SIGNS, AND TEMP. PAVMT. MARKINGS SHALL BE CONSIDERED AS SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.
  - THE "NO PASSING" SIGN SHALL BE USED TO PREVENT PASSING FOR 150' IN ADVANCE OF THE STOP BAR. THE SIGN SHALL BE PER STANDARD E-708, EXCEPT THE COLOR SHALL BE A BLACK TEXT AND BORDER ON A REFLECTORIZED ORANGE BACKGROUND.
  - ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.
  - TWO-WAY TRAFFIC SHALL BE MAINTAINED ON THE DETOUR WHENEVER POSSIBLE. DURING TWO-WAY TRAFFIC, THE SIGNALS SHALL BE SET ON FLASHING YELLOW.
  - APPROACH WIDTHS SHALL BE AS DETAILED IN SECTION 638.04(3) TO MINIMIZE VEHICLE DELAY.
  - AN ADVANCED CONSTRUCTION WARNING SIGN PACKAGE SHALL BE PROVIDED ON EACH APPROACH PER STANDARD E-22. THE "BUMP" SIGN AND ON PROJECT CONSTRUCTION SIGNS PER STD. E-6. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, PLASTIC MARKERS, TYPE III BARRICADES, ETC. SHALL BE PAID AS A PART OF "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS" - ITEM 527.00 OR "TRAFFIC CONTROL" - ITEM 64.00.



- ALL BANDS SHALL BE REFLECTORIZED (HIGH INTENSITY).
- THE MARKERS SHALL BE ABLE TO WITHSTAND IMPACT WITHOUT DAMAGE TO THEMSELVES OR TO VEHICLES.
- THE BASES SHALL BE SECURED TO THE PAVEMENT.



- FLASHING BEACON NOTES**
- WIRE CONNECTIONS AT THE BASE OF THE POST SHALL BE FUSED WITH A WATER-TIGHT DISCONNECT PLUG-IN TYPE CONNECTOR WHICH WILL DISCONNECT WITHOUT DAMAGE DURING A EMOCKDOWN. EACH INSTALLATION SHALL BE GROUNDED.
  - AT THE CONTRACTOR'S OPTION:
    - THE POWER SUPPLY MAY BE AERIAL OR UNDERGROUND
    - POWER MAY BE COMBINED WITH THE TRAFFIC SIGNAL OR SEPARATE.
    - THE FLASHER MAY BE INSTALLED ON A STUB POLE NEAR THE SIGN ON A UTILITY POLE (WITH UTILITY COMPANY APPROVAL) OR AT THE SAME LOCATION AS THE TRAFFIC SIGNAL CONTROLLER.
  - THE FLASHER UNIT SHALL BE ONE CIRCUIT AND INCLUDE A RADIO INTERFERENCE FILTER.
  - THE FLASHING BEACON INSTALLATION SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.
  - BATTERY OPERATED FLASHERS SHALL NOT BE ALLOWED.

ADVANCE VEHICLE LOOP DETECTOR FOR DILEMMA ZONE PROTECTION WITH EXTENDED CALL DETECTOR SET AT 5 SECONDS IF REQ'D IN NOTES FOR EACH LOCATION.

48" x 48" (ORANGE) W/FLASHING BEACON WHERE SIGNAL VISIBILITY IS OBSCURED. SEE DETAIL. FLASHING BEACON WILL BE INSTALLED ON THE EASTBOUND LANE OF THIS PROJECT.

TD-2A

ORIGINAL PREPARED NOV. 1986

DATE	REVISIONS	BY
1-8-87	ADDED "BUMP" SIGN	DSP
2-27-87	CHG. DPKD TO 15 MPH-NOTE 2.	DSP

IF THE CONTRACTOR SO CHOOSES HE MAY INSTALL POSITIVE BARRIER AT HIS EXPENSE TO PROTECT THE WORKSITE. THE APPROACH ENDS OF THE BARRIER SHALL BE TAPERED AT A RATE OF 1:1 AND AS A RESULT WILL REQUIRE PLACING THE STOP BARS OTHER THAN AS SHOWN ABOVE. BARRIER ENDS SHALL BE PLACED 20 FEET FROM EDGE OF SHOULDER OR TREATED WITH A CRASH ATTENUATOR. DELINEATORS SHALL BE PLACED ON TOP OF THE BARRIER AT 30' SPACING, WHITE ON DRIVERS RIGHT SIDE WITH YELLOW ON THE DRIVER'S LEFT SIDE.

- LEGEND**
- SURFACE MOUNTED FLEXIBLE TUBULAR MARKER
  - ⊙ REFLECTORIZED PLASTIC DRUMS
  - ▣ TYPE III BARRICADES (SEE STD. E-7A)
- ITEM LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.

**ONE-WAY TEMPORARY TRAFFIC SIGNAL (WITH FLASHING BEACON)**

BRIDGE NO. 33 MT. HOLLY

PREPARED BY LKA/SM DATE 1/27/87  
 CHECKED BY DSP DATE 2/1/87  
 DESIGN SUPERVISOR DATE  
 PROJ. LUDLOW - MT. HOLLY F DECK (2) S  
 TRAFFIC SHEET NO. 1 OF 4  
 SHEET 9 OF 40 SHEETS



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	REPAIR	"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	24"	30"		
V+100		36" x 36"				9.0							1			X												Place at same location as removed sign		E-19		
V+100 No end of island		24" x 30" 20 1/2" x 18"				5.0 4.5							1		X														E-15B E-19-B			
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-19B E-15C			
V+100		30" x 30"				6.25							1		X														E-15C			
V+103 W		24" x 30" 20 1/2" x 18"				5.0 4.5							1		X												Install only if existing were removed to provide turning radius		E-15B E-19B			
V+103 E		24" x 30" 20 1/2" x 18"				5.0 4.5							1		X												"		E-15B E-19B			
TOTALS						57.25																										

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'.

EA.	SF.	SF.	EA.	SF.	203 lbs
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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	20
646.51	Temporary 4" Yellow Line	LF	1220	680	-
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

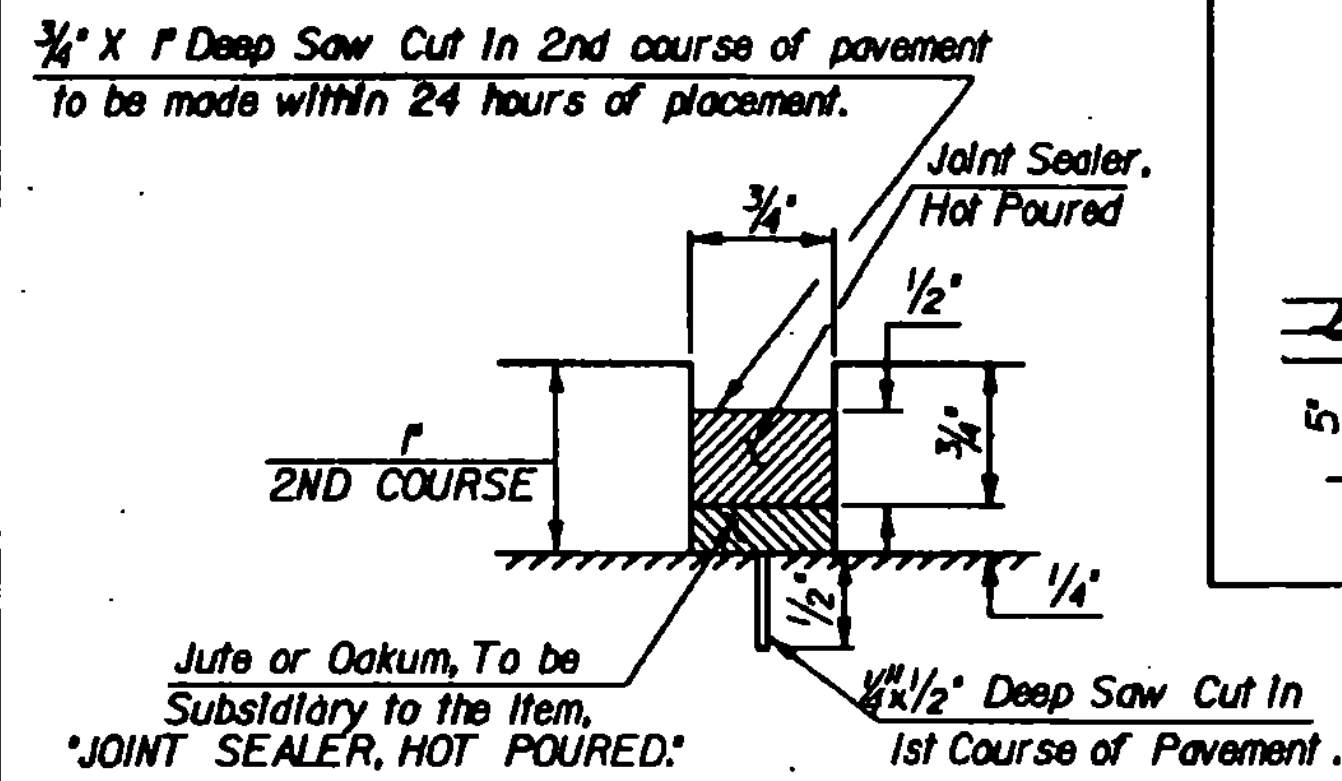
NOTES AND DETAILS

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.

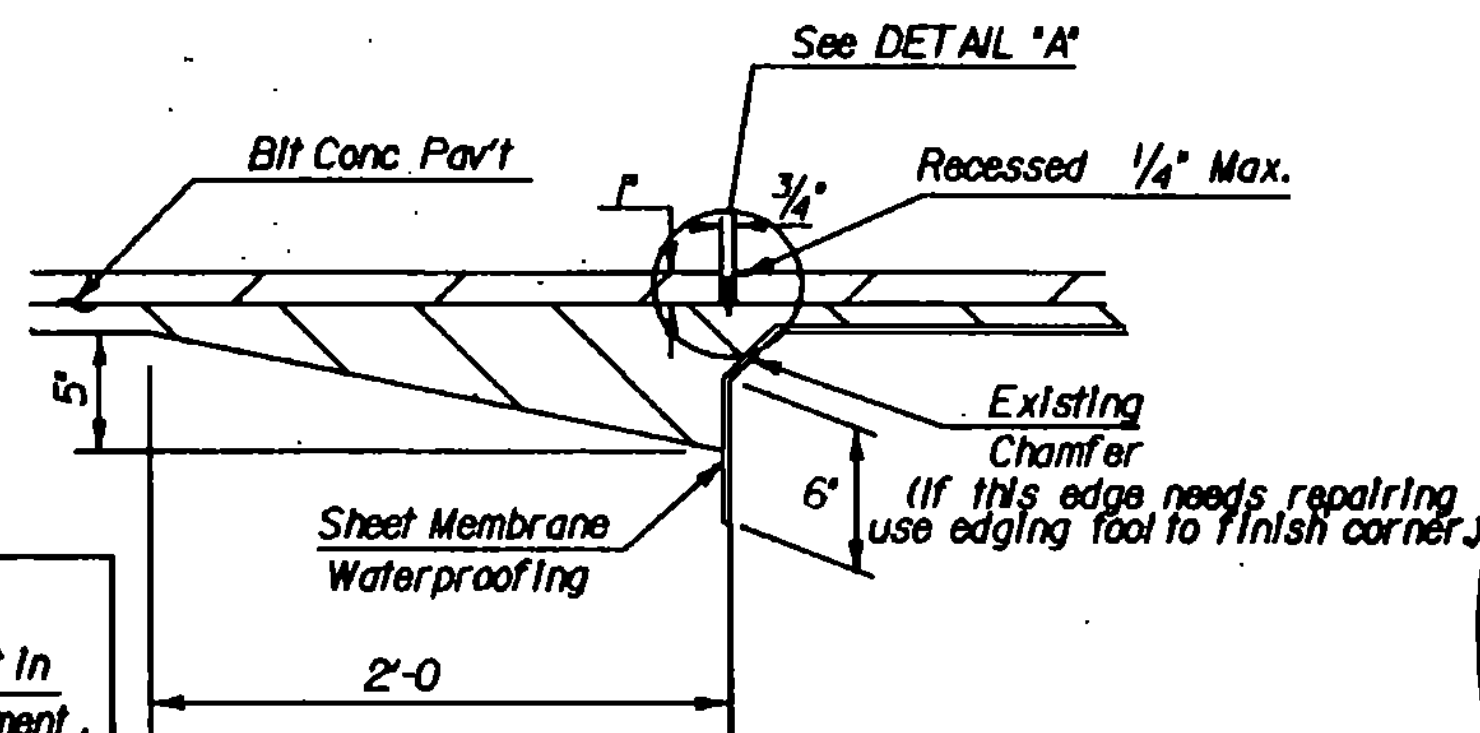
<b>TRAFFIC SIGN SUMMARY SHEET</b> 4 NOTES	PREPARED BY _____ DATE _____
	CHECKED BY _____ DATE _____
	DESIGN SUPERVISOR _____ DATE _____
	PROJ. _____
TRAFFIC SIGN SUMMARY SHEET NO. <u>3</u> OF <u>4</u> SHEET <u>11</u> OF <u>90</u> SHEETS	





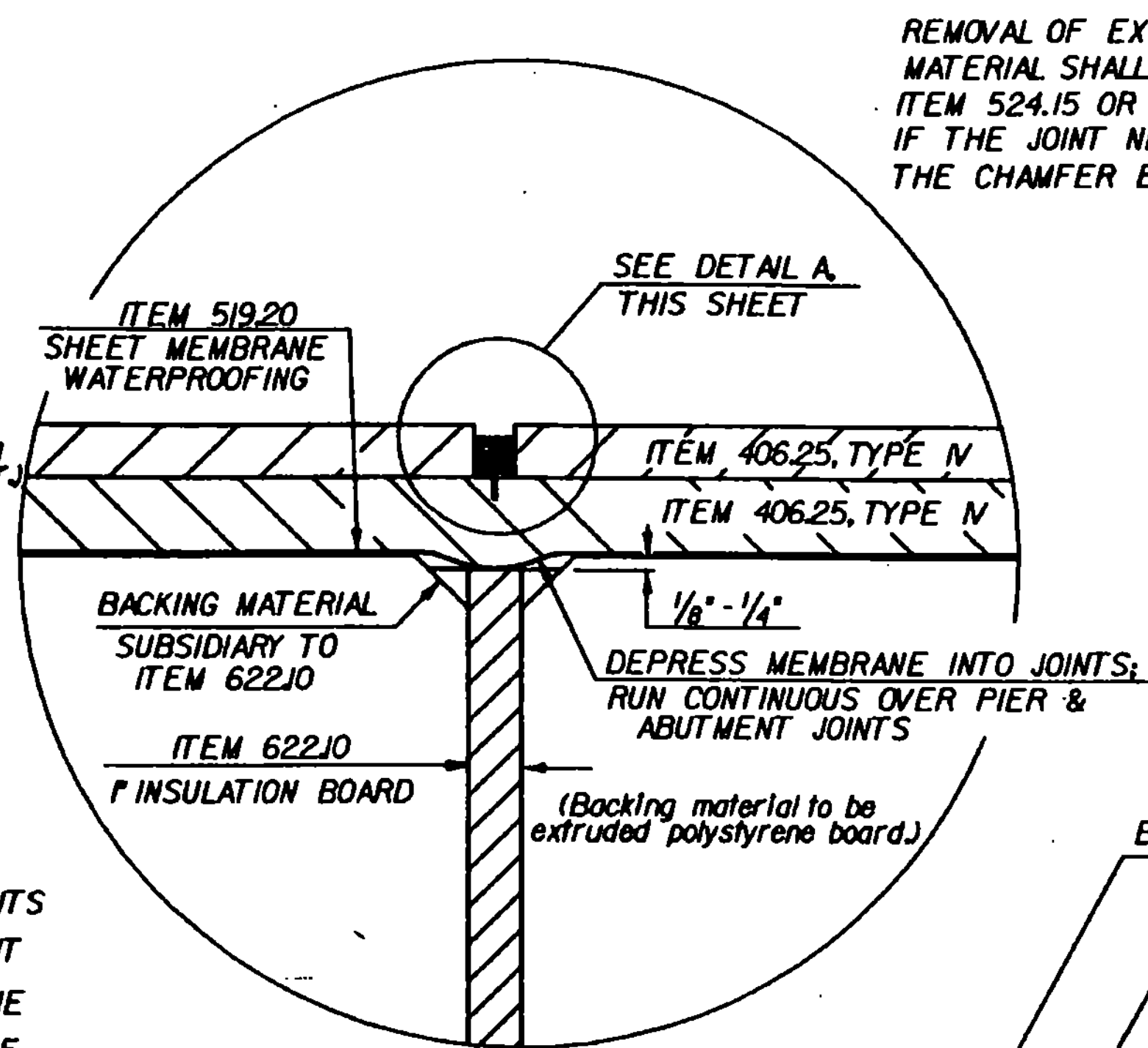
**DETAIL A**  
Scale 1" = 1'

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



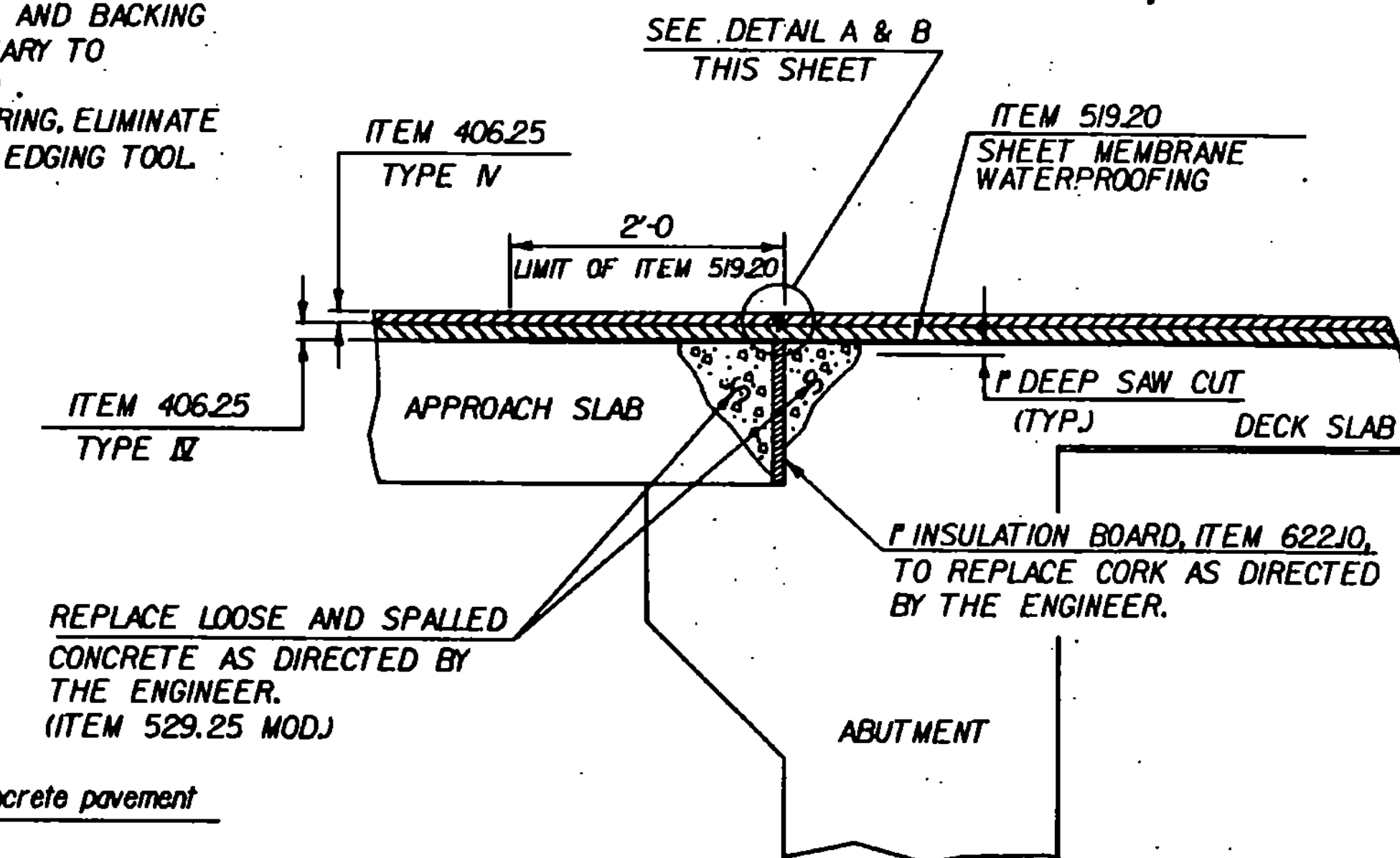
**JOINT SEALER DETAIL WITHOUT SURFACE APPROACH SLAB**  
Scale 1/2" = 1'-0"

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.

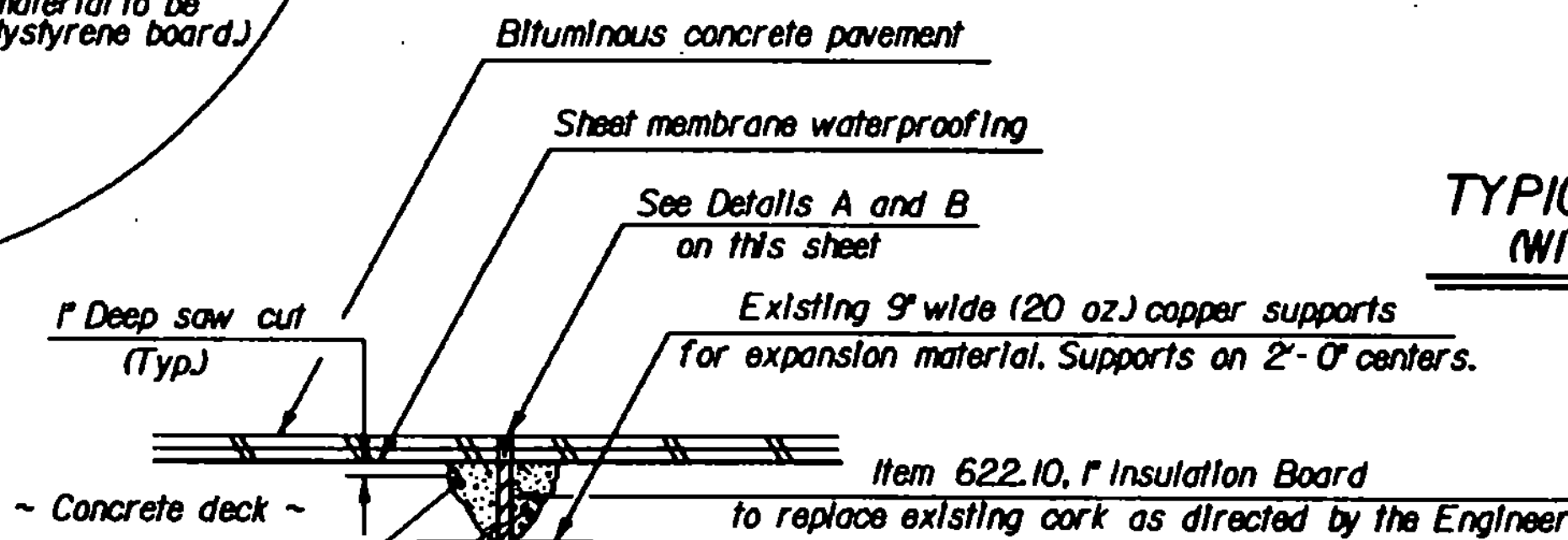


**DETAIL B**  
NTS

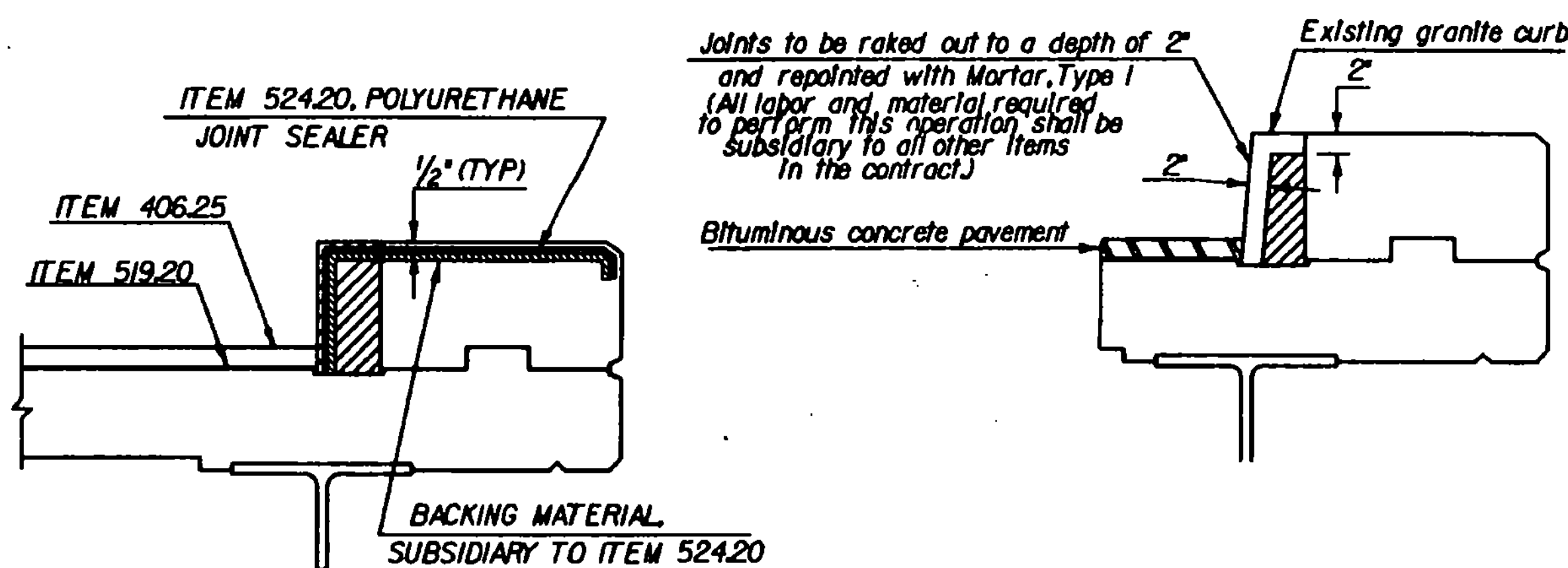
REMOVAL OF EXISTING JOINT AND BACKING MATERIAL SHALL BE SUBSIDIARY TO ITEM 524.15 OR ITEM 622.10. IF THE JOINT NEEDS REPAIRING, ELIMINATE THE CHAMFER BY USING AN EDGING TOOL.



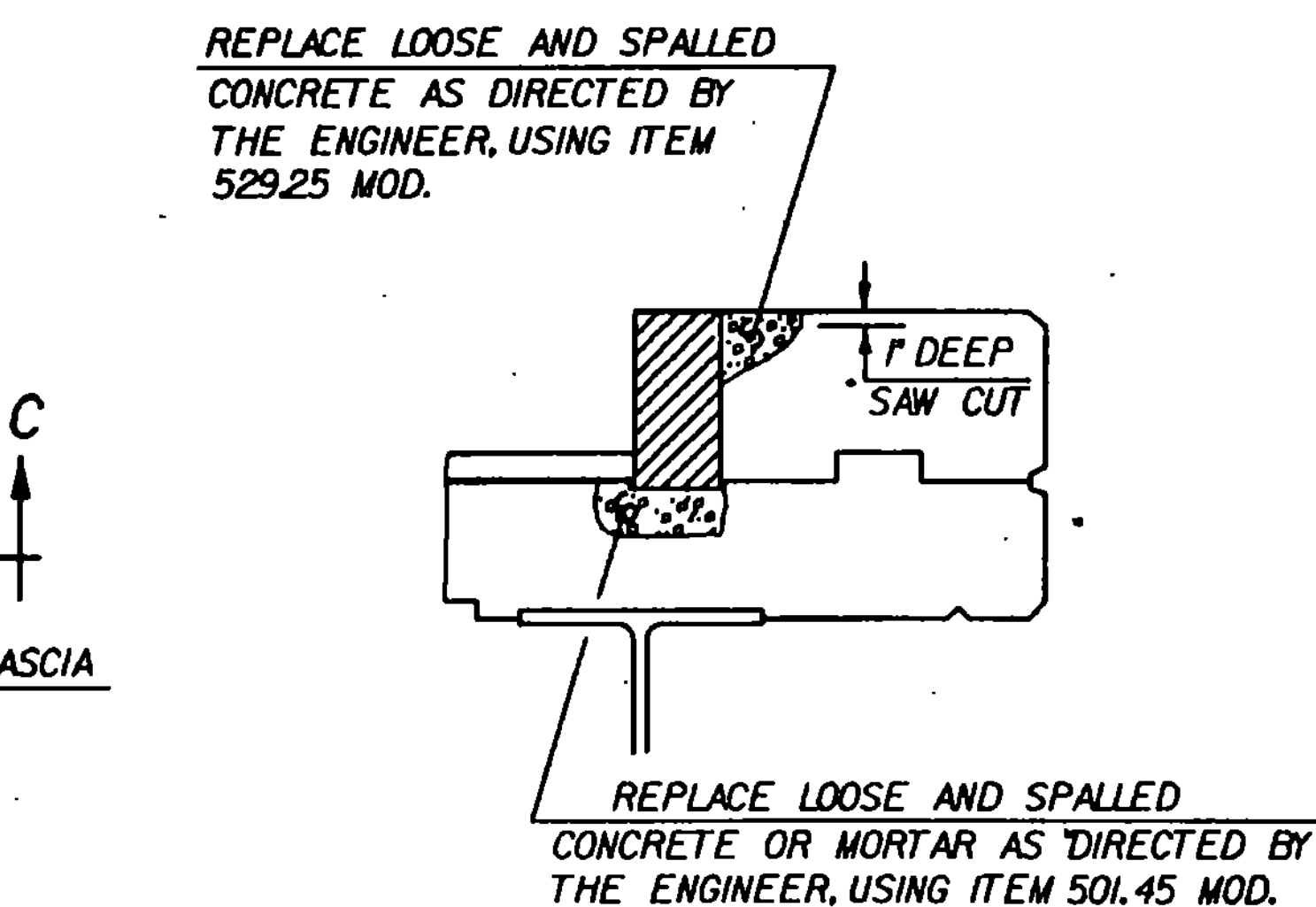
**TYPICAL ABUTMENT JOINT DETAIL WITH SURFACE APPROACH SLAB**  
NTS



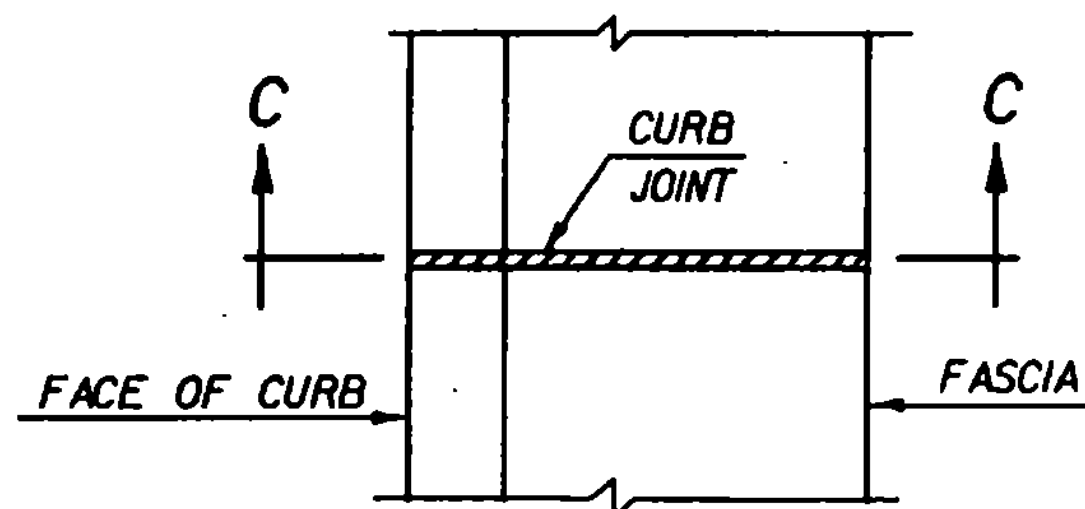
**TYPICAL PIER JOINT DETAIL**  
NTS



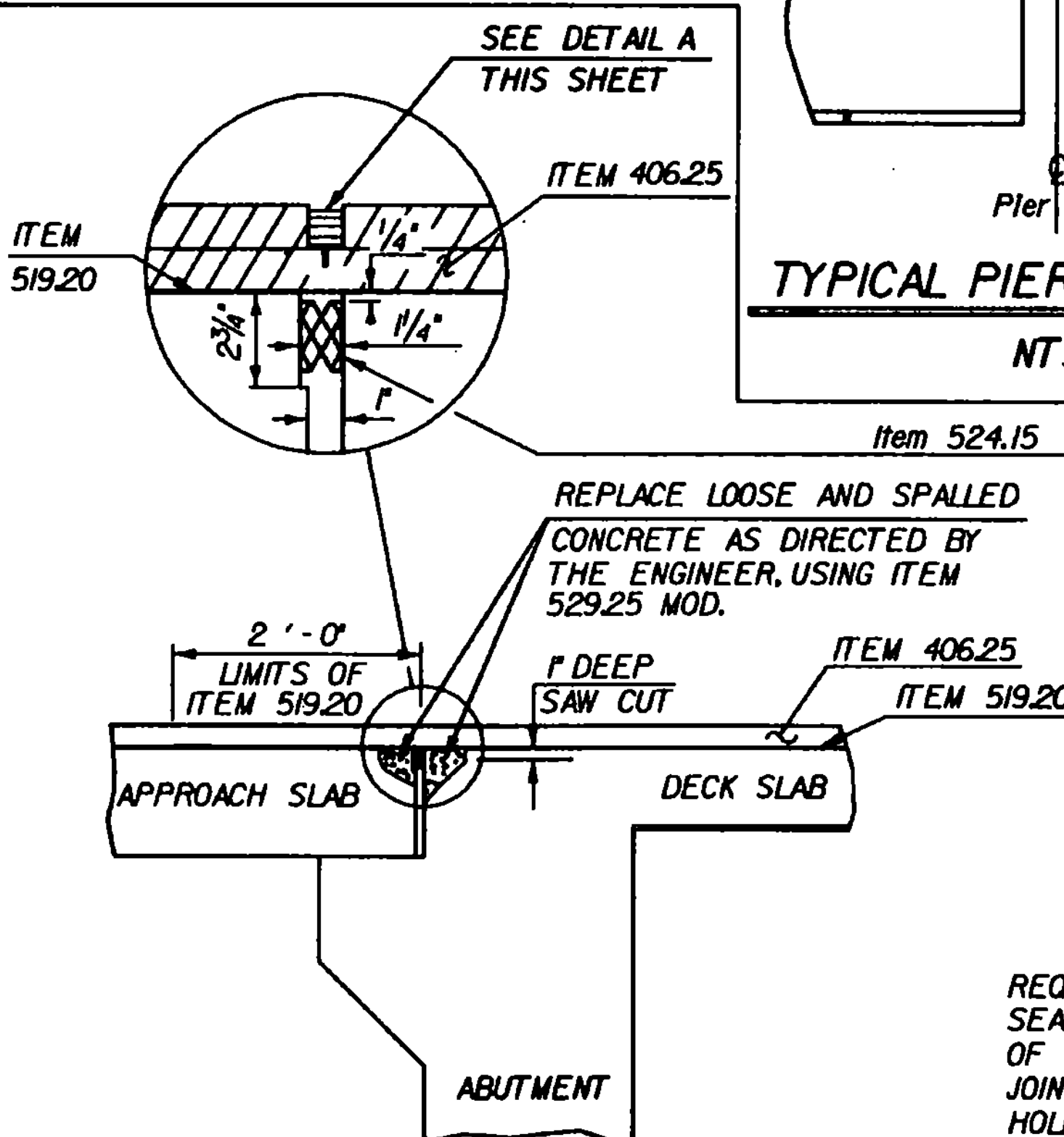
**SECTION C - C**



**CURB JOINT DETAIL**  
NTS



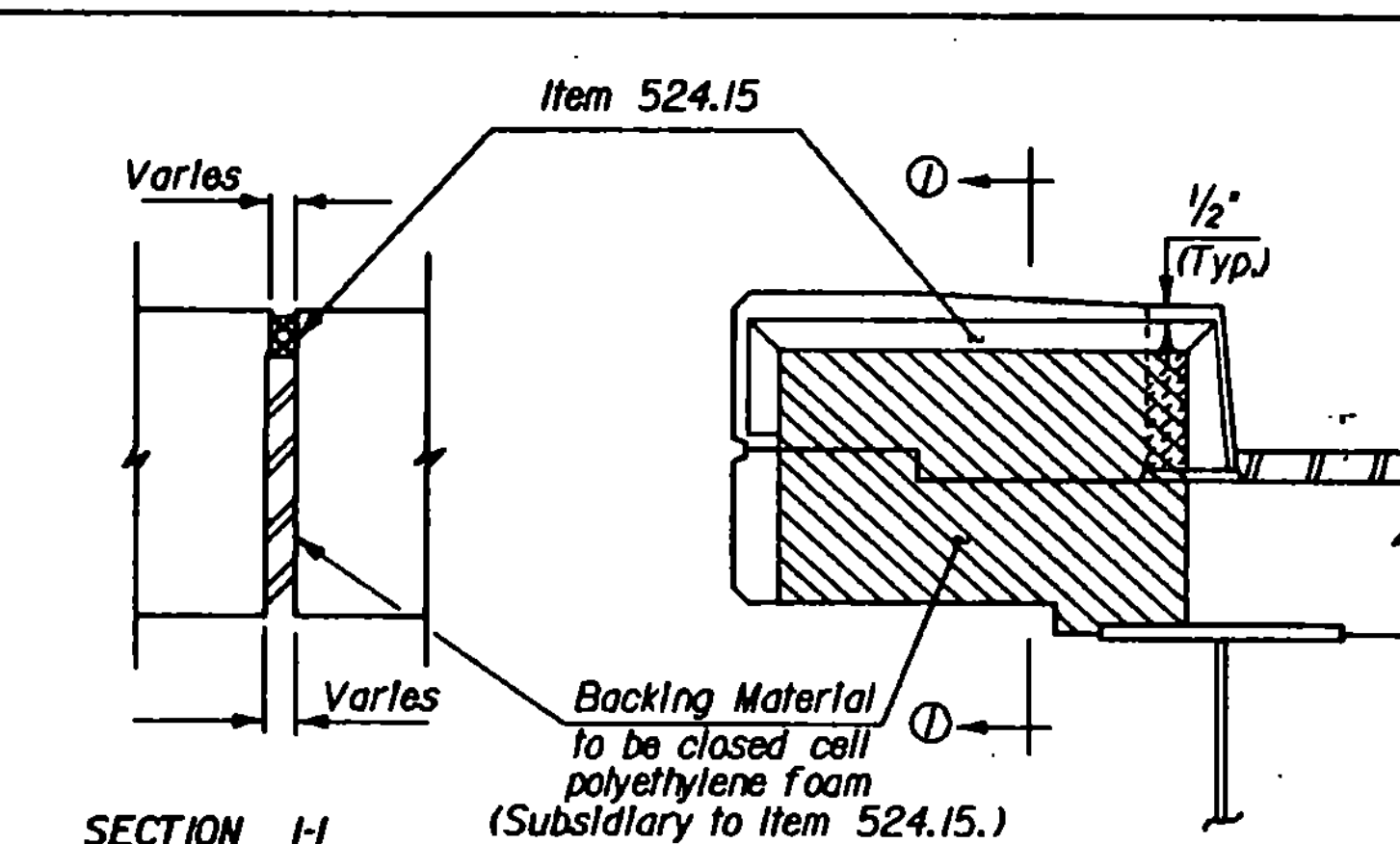
**PLAN VIEW**



**COMPRESSION SEAL DETAILS**  
NTS

**ADHESIVE SPECIFICATION**

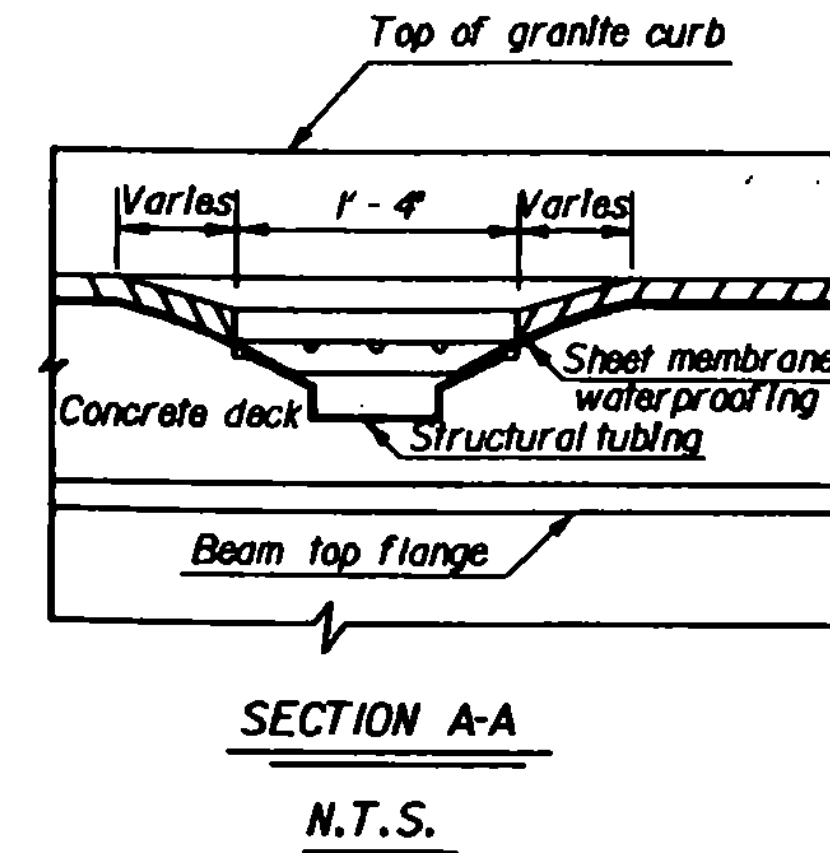
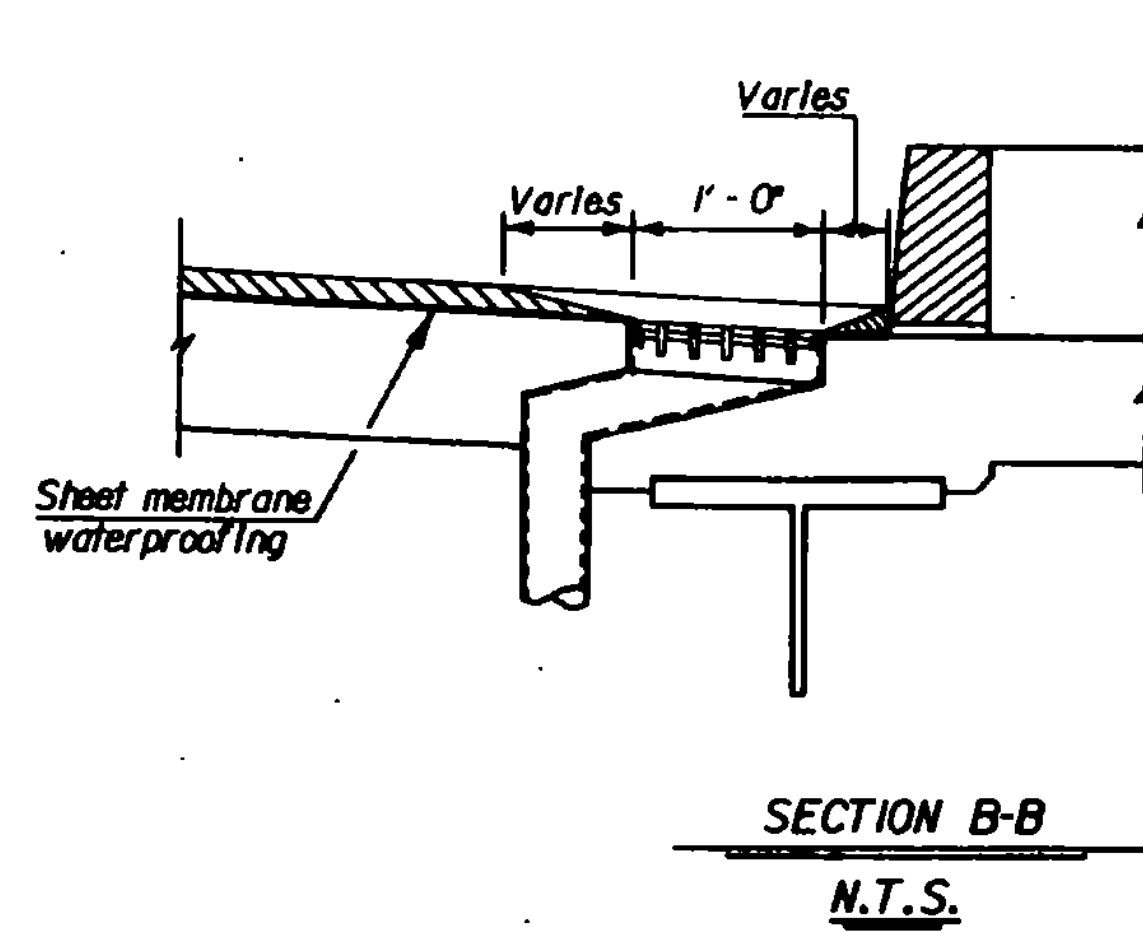
REQUIRED ADHESIVE FOR STRUCTURAL JOINT SEALS SERVES AS A LUBRICANT FOR INSERTION OF THE COMPRESSION SEALS IN STEEL AND CONCRETE JOINTS; PRIMES THE JOINT FACES; SEALS SMALL HOLES AND IMPERFECTIONS IN CONCRETE WALLS. ONE PART MOISTURE CURING POLYURETHANE AND AROMATIC HYDROCARBON SOLVENT MIXTURE. SOLID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



**CURB JOINT DETAIL A**  
NTS

Any existing Joint Sealer, Preformed Neoprene, If removed, shall not be reused but shall be replaced with new material.

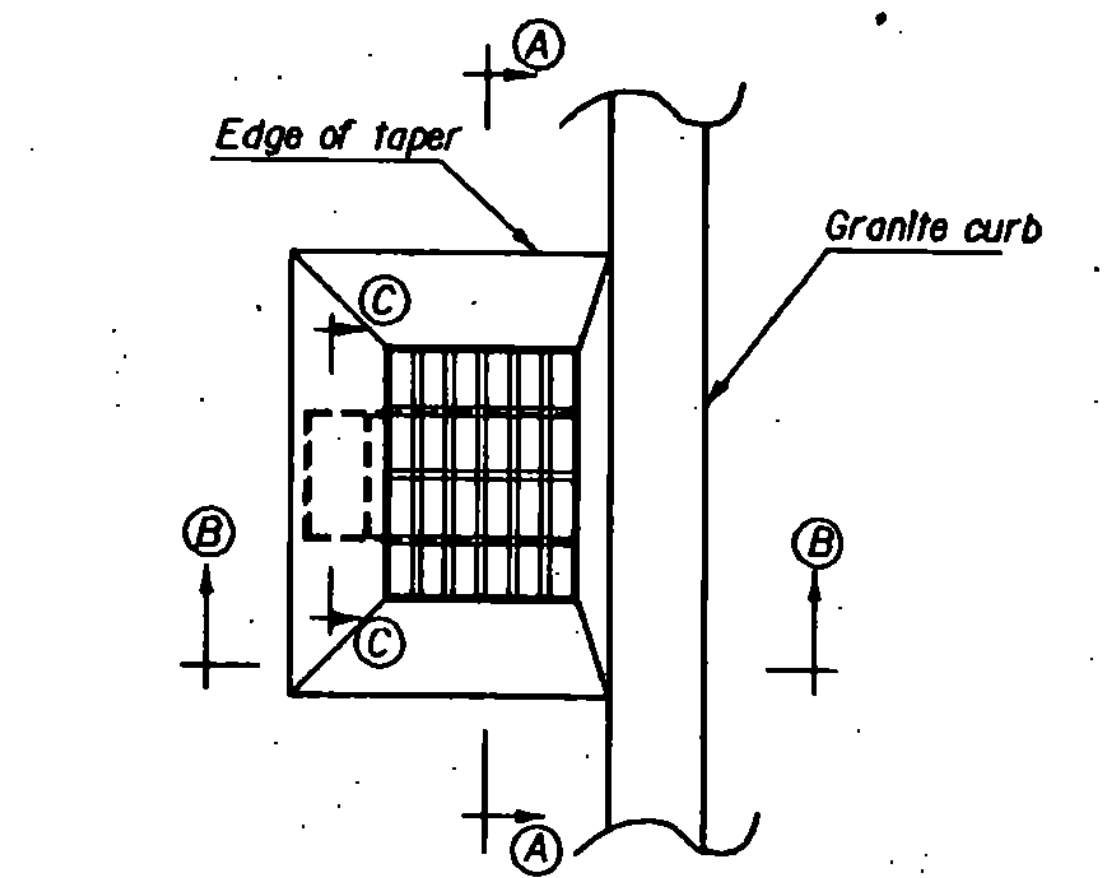
<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b>	
Town Of <b>LUDLOW - MT. HOLLY</b>	Bridge No. _____
Highway No. <b>VT. 100 &amp; VT. 103</b>	Log Sta. _____ Surv. Sta. _____
<b>DECK REHABILITATION</b>	
TYPICAL DETAILS	
Designed By <b>G.S. ROGERS</b>	Drawn By <b>G. Schelley/D. Newton</b>
Checked By <b>G.S. ROGERS</b>	Date <b>6/87</b> Bridge Design Supervisor
PROJECT <b>LUDLOW - MT. HOLLY</b>	PROJECT NO. <b>F-DECK (22) S</b>
U.S.C. Info. <b>05A1130.33JDECKREHAB</b>	Bridge Sheet No. _____
	Sheet <b>13</b> of <b>40</b>



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

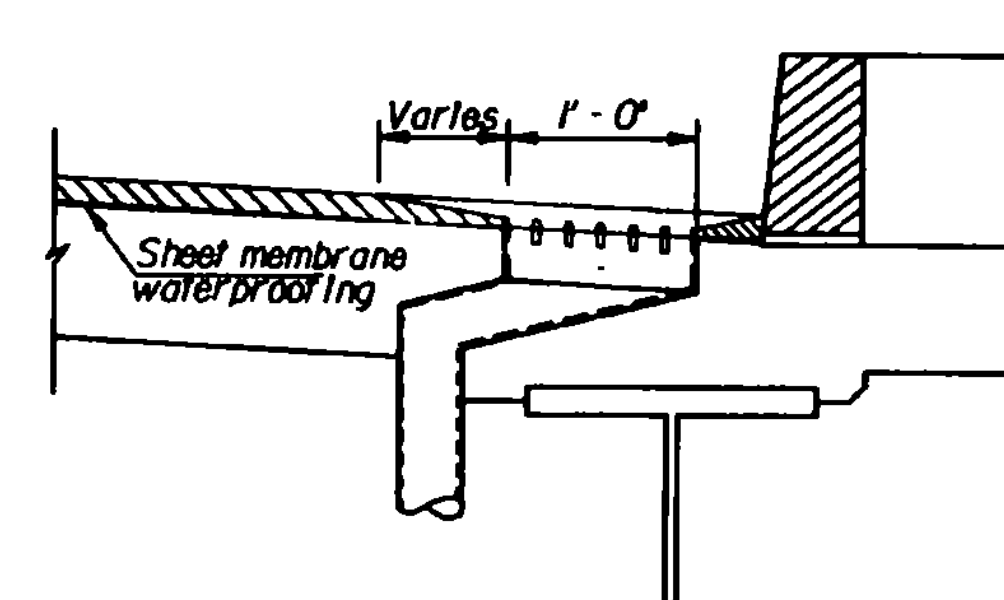
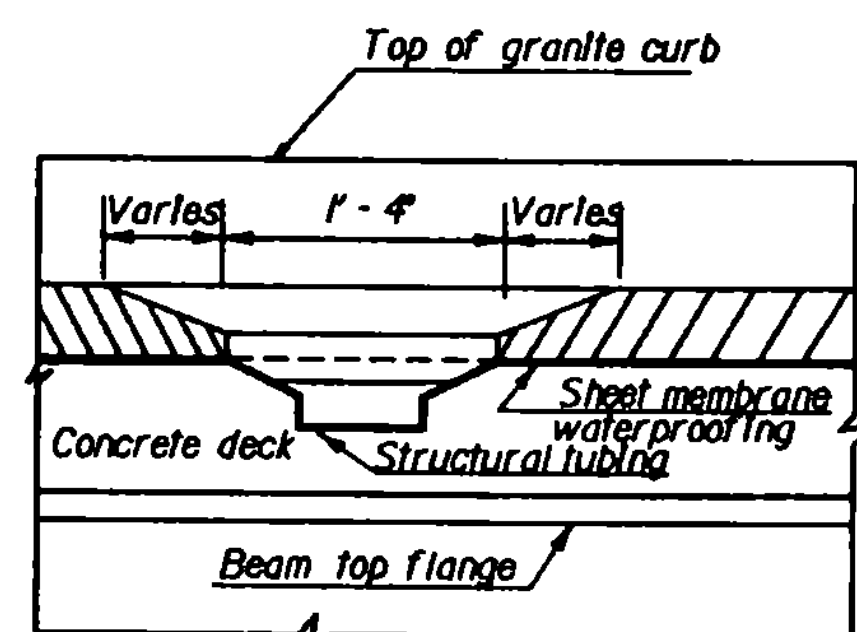
MEMBRANE DETAIL FOR SCUPPERS FLUSH WITH DECK

①

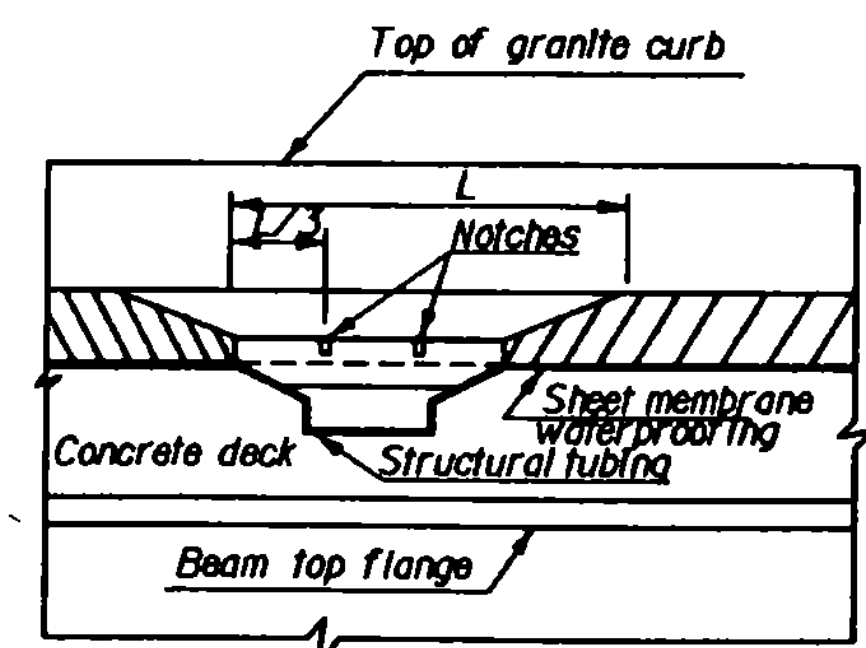


PLAN VIEW  
(TYP. FOR DETAILS NO. 1 & 2)  
N.T.S.

③



Fit membrane to outside perimeter of scupper.

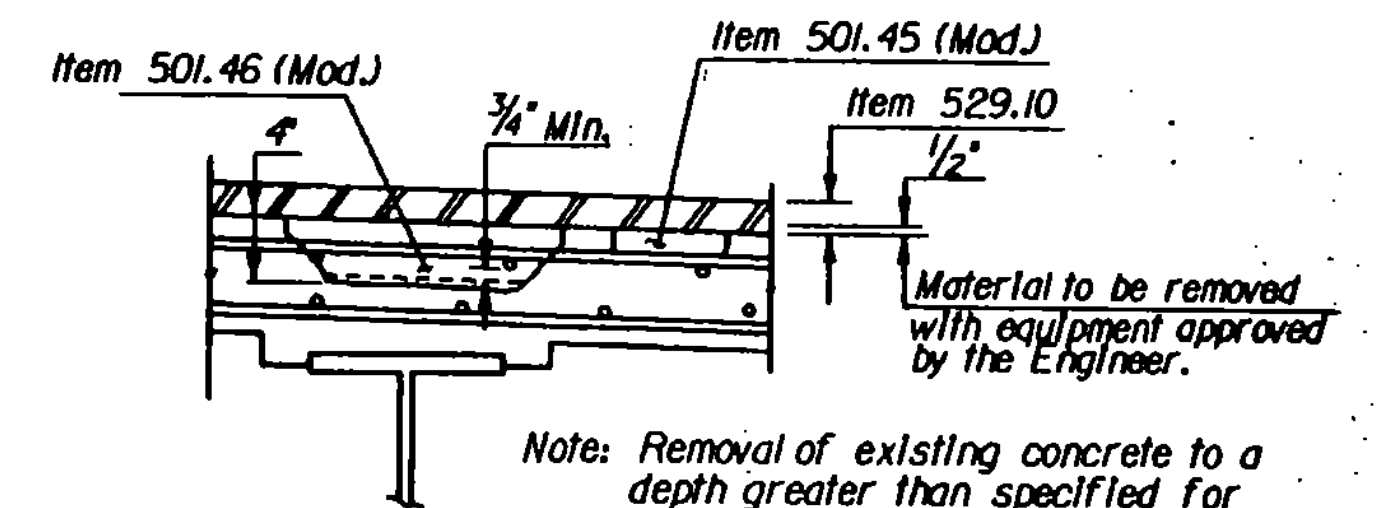


SECTION C-C Note: Notch scupper 1/2" wide to top of concrete on three sides. This work to be subsidiary to the Item 519.20  
N.T.S.

MEMBRANE DETAIL FOR RAISED SCUPPERS

②

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.



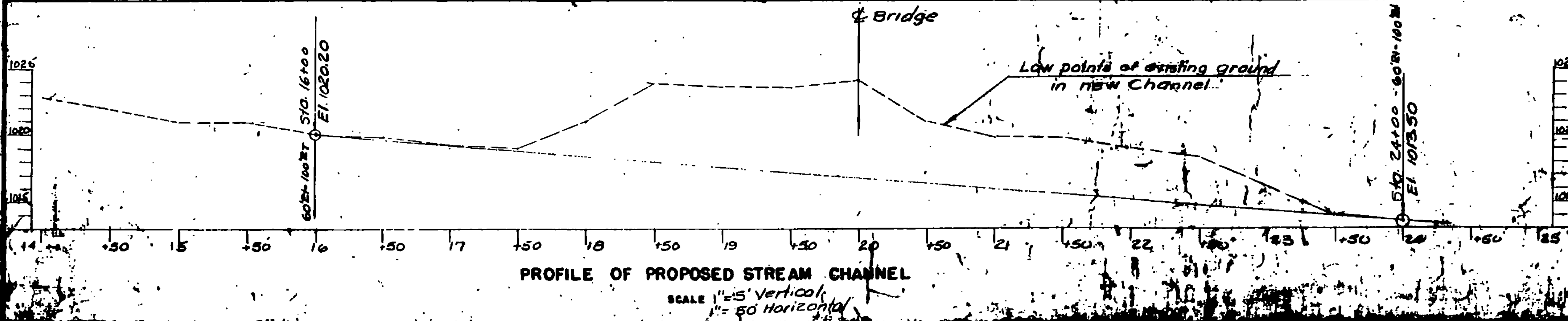
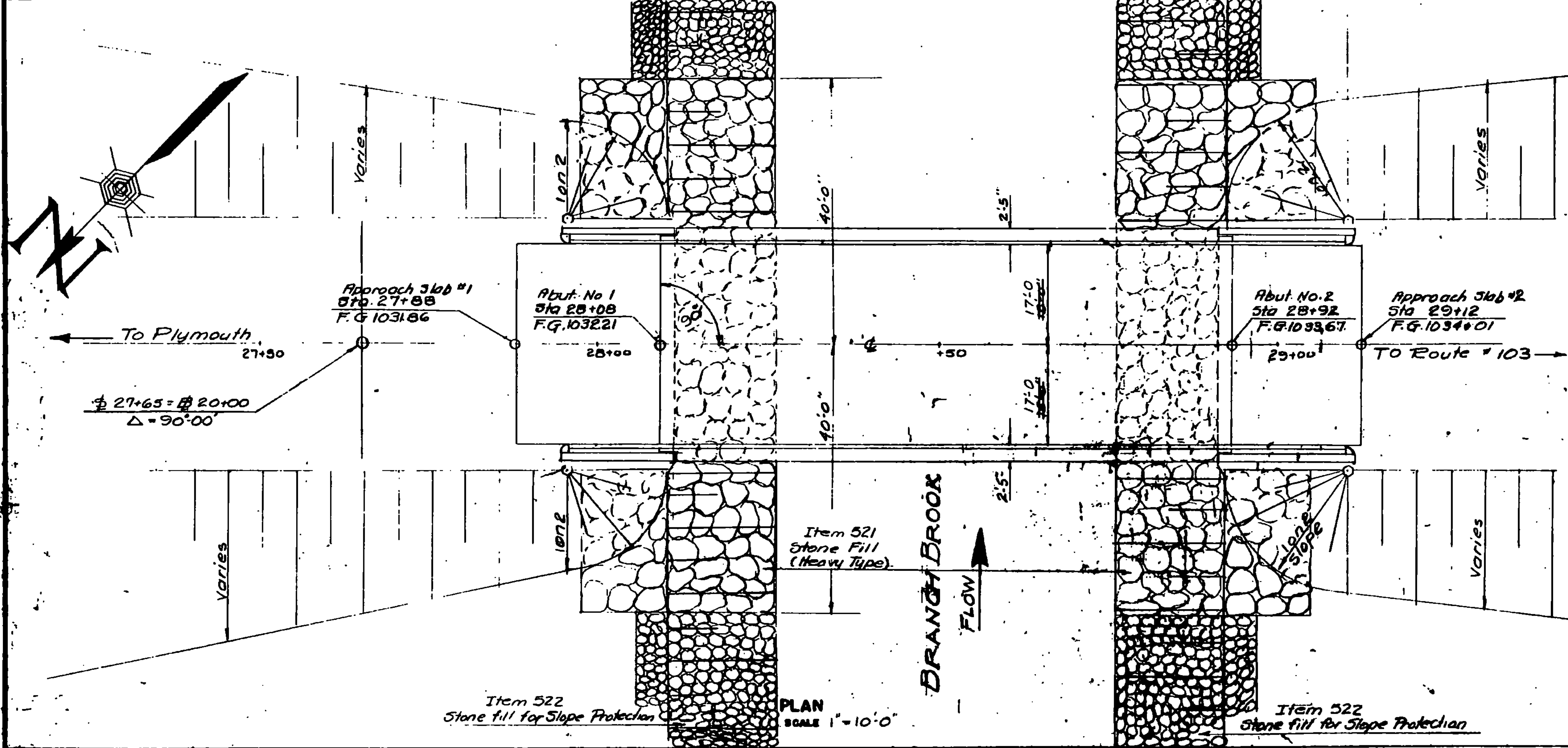
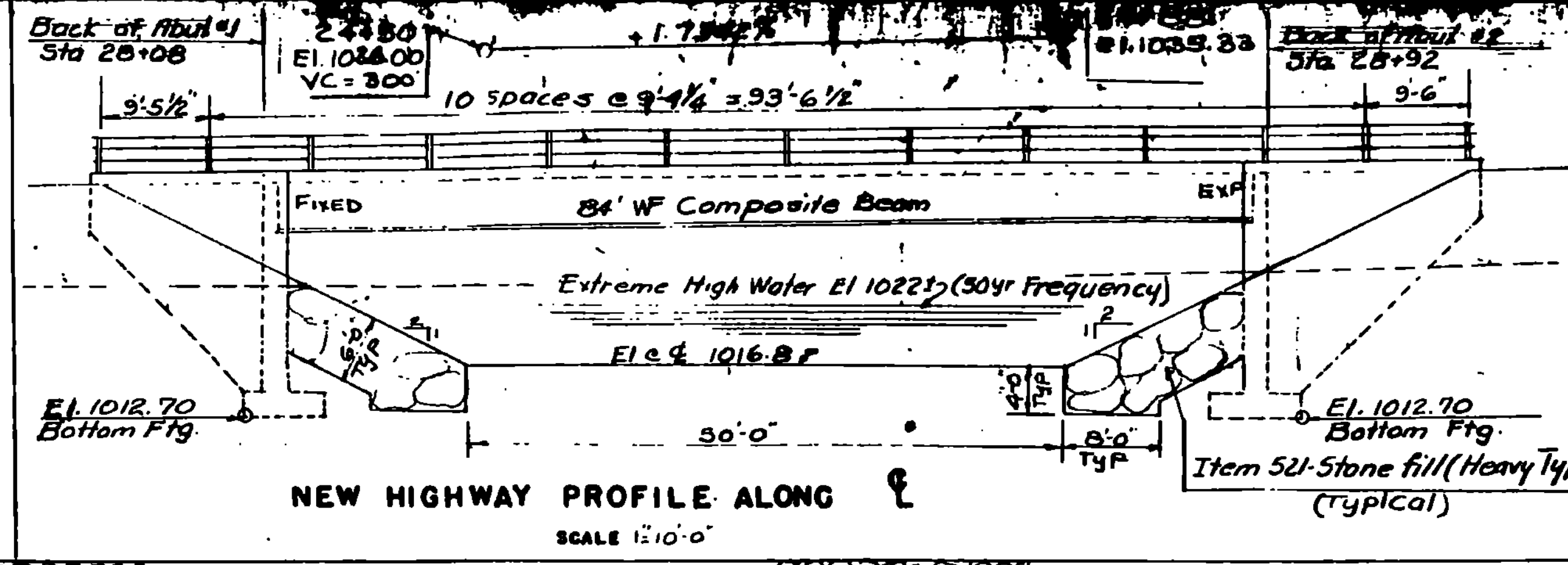
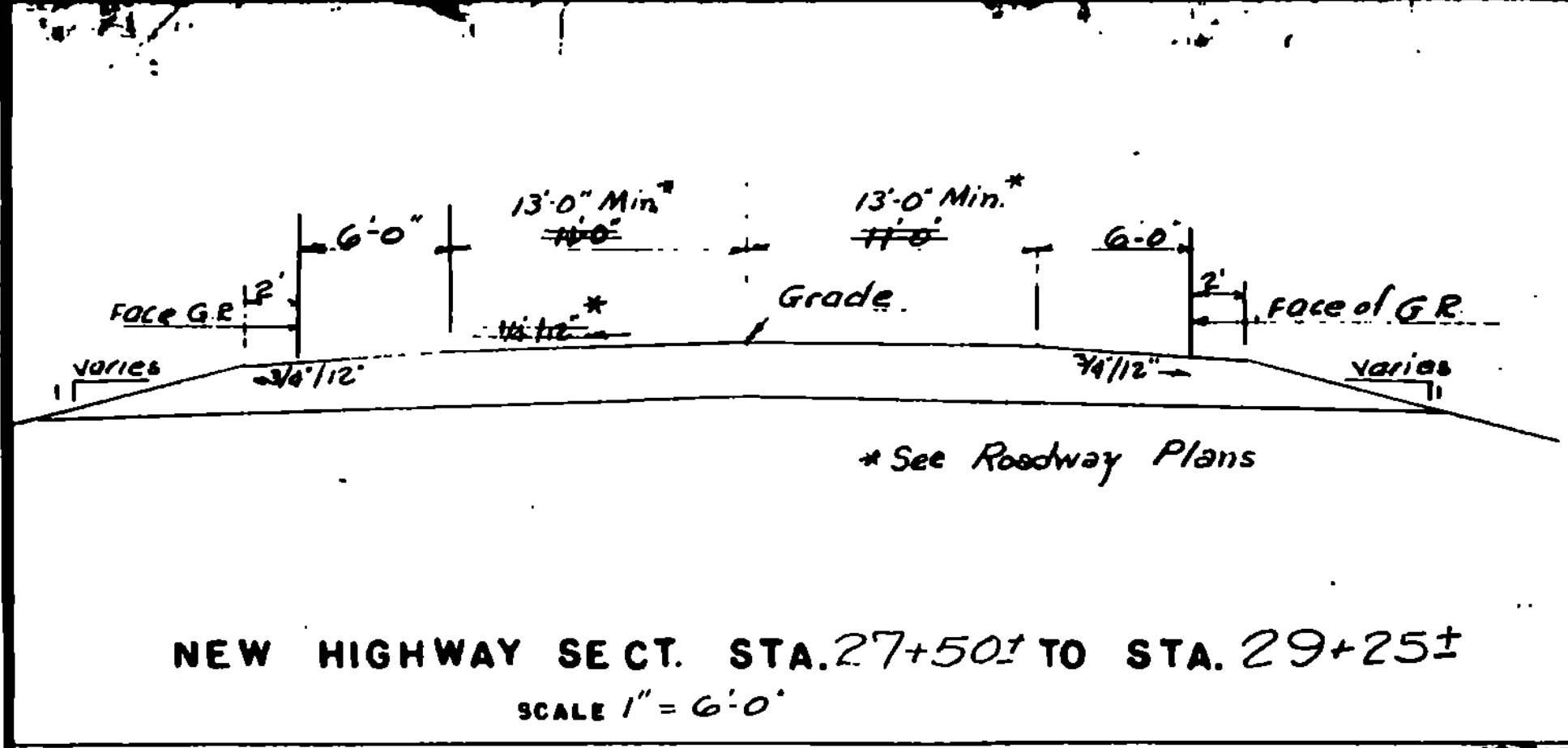
Note: Removal of existing concrete to a depth greater than specified for Item 501.46 (Mod.) shall be paid under the Item 529.25 (Mod.).

TYPICAL LIMITS FOR REMOVAL ITEMS

N T S

④

<b>STATE OF VERMONT AGENCY OF TRANSPORTATION</b>			
Town Of <b>LUDLOW - MT. HOLLY</b>	Bridge No. _____		
Highway No. <b>VT 100 &amp; VT 103</b>	Log Sta. _____		
<b>DECK REHABILITATION</b>			
<b>TYPICAL DETAILS</b>			
Designed By <b>G.S. ROGERS</b>	Drawn By <b>D.W. NEWTON</b>		
Checked By <b>G.S. ROGERS</b>	Date <b>6/87</b>	Bridge Design Supervisor	Date <b>6/87</b>
<b>R.L. OATLEY</b>			
PROJECT <b>LUDLOW - MT. HOLLY</b>	PROJECT NO. <b>F-DECK (22) S</b>		
I.A.C. info. <b>ZFAL30,321SCUPREHABDGN PRF.LUDMTHLY</b>			
Bridge Sheet No. _____	Sheet <b>14</b> of <b>40</b>		



HIGHWAY NO. VT 100 NAME OF HIGHWAY \_\_\_\_\_  
 STRUCTURE NO. \_\_\_\_\_ COUNTY WINDSOR TOWN LUDLOW  
 PROJECT NO. F025-1(6) LOCATION BRANCH BROOK

**EXISTING STRUCTURE**

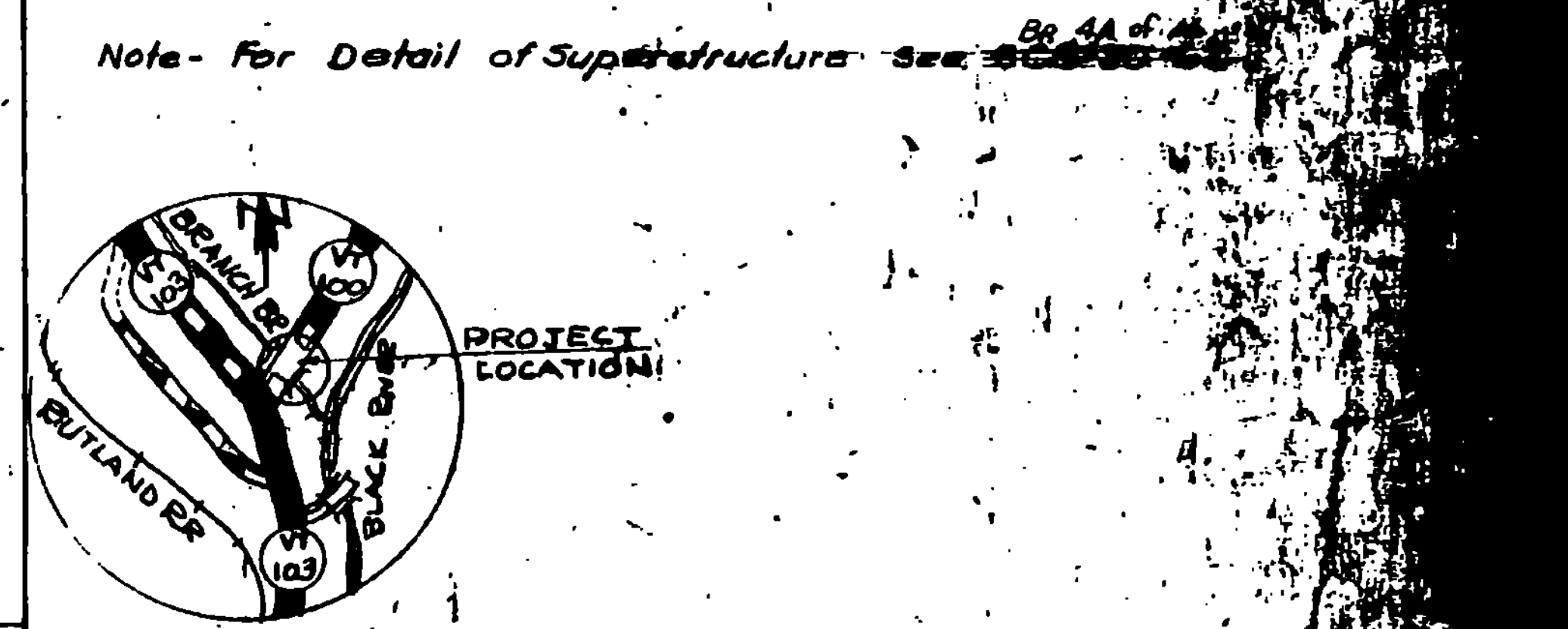
- 1 RATED LOADING OF EXISTING STRUCTURE H-15 Live Loading
- 2 TYPE OF EXISTING STRUCTURE Concrete I Beams
- 3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE 4.4±
- 4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE Remove COST OF REMOVAL \$500
- 5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE NO
- 6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT NO
- 7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE 1021.4± WATERWAY TO ORDINARY H.W. 120± ft.
- 8 EXTREME HIGH WATER AT EXISTING STRUCTURE \_\_\_\_\_
- 9 SPAN OF EXISTING BRIDGE UPSTREAM 39 WATERWAY TO EXTREME H.W. 500± ft.
- 10 SPAN OF EXISTING BRIDGE DOWNSTREAM None WATERWAY TO EXTREME H.W. \_\_\_\_\_
- 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 one 84' span Composite WF Beam
- 2 RECOMMENDED CLEAR SPAN OR SPANS one span, 80
- 3 MEASURED PARALLEL TO NEW HIGHWAY 80
- 4 MEASURED AT RIGHT ANGLES TO STREAM 80
- 5 ARE THERE OBJECTIONS TO A PIER IN THE STREAM, ANSWER YES OR NO NA
- 6 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE 1020± (3'±)
- 7 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE 1022 SOURCE OF INFORMATION Computed
- 8 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE? YES
- 9 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? NO IS ORDINARY SIZE \_\_\_\_\_
- 10 LOW WATER ELEVATION AT NEW STRUCTURE 1018± (1'±)
- 11 DRAINAGE AREA IN ACRES ABOVE STRUCTURE 2432 CHARACTER OF TERRAINE Mountainous
- 12 IS STREAM EVER DRY? NO
- 13 VELOCITY OF STREAM AT HIGH WATER STAGE 8.15 ESTIMATED DISCHARGE 2600 CFS
- 14 AREA FULL OPENING 3000 AREA BELOW ORDINARY H.W. 175±
- 15 CHARACTER OF SCOUR \_\_\_\_\_ DRIFT \_\_\_\_\_
- 16 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE NA
- 17 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION 7.0± ±
- 18 ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE \_\_\_\_\_
- 19 RECOMMENDED TYPE OF PAVEMENT 1 1/2" Bit Conc Pavt. 4" Base Slab
- 20 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. NA ONE OR TWO WAYS \_\_\_\_\_ PROBABLE COST \_\_\_\_\_
- 21 PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE? NA
- 22 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? NO
- 23 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS 2100± lb. SHOULD PILES BE USED? NO

**FOUNDATION INFORMATION**

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



Sheet Revised 2-2-99  
**BR 3 OF 4**

STATE OF VERMONT  
DEPARTMENT OF TRANSPORTATION

F-DECK (22)S, BR.# 99  
THIS SHEET FOR INFORMATION ONLY

Recommended for Approval: Ameyan 6/1/64  
Bridge Engineer Date

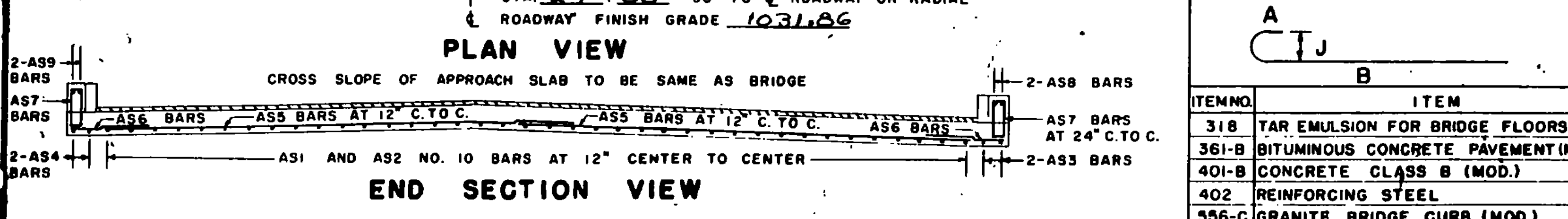
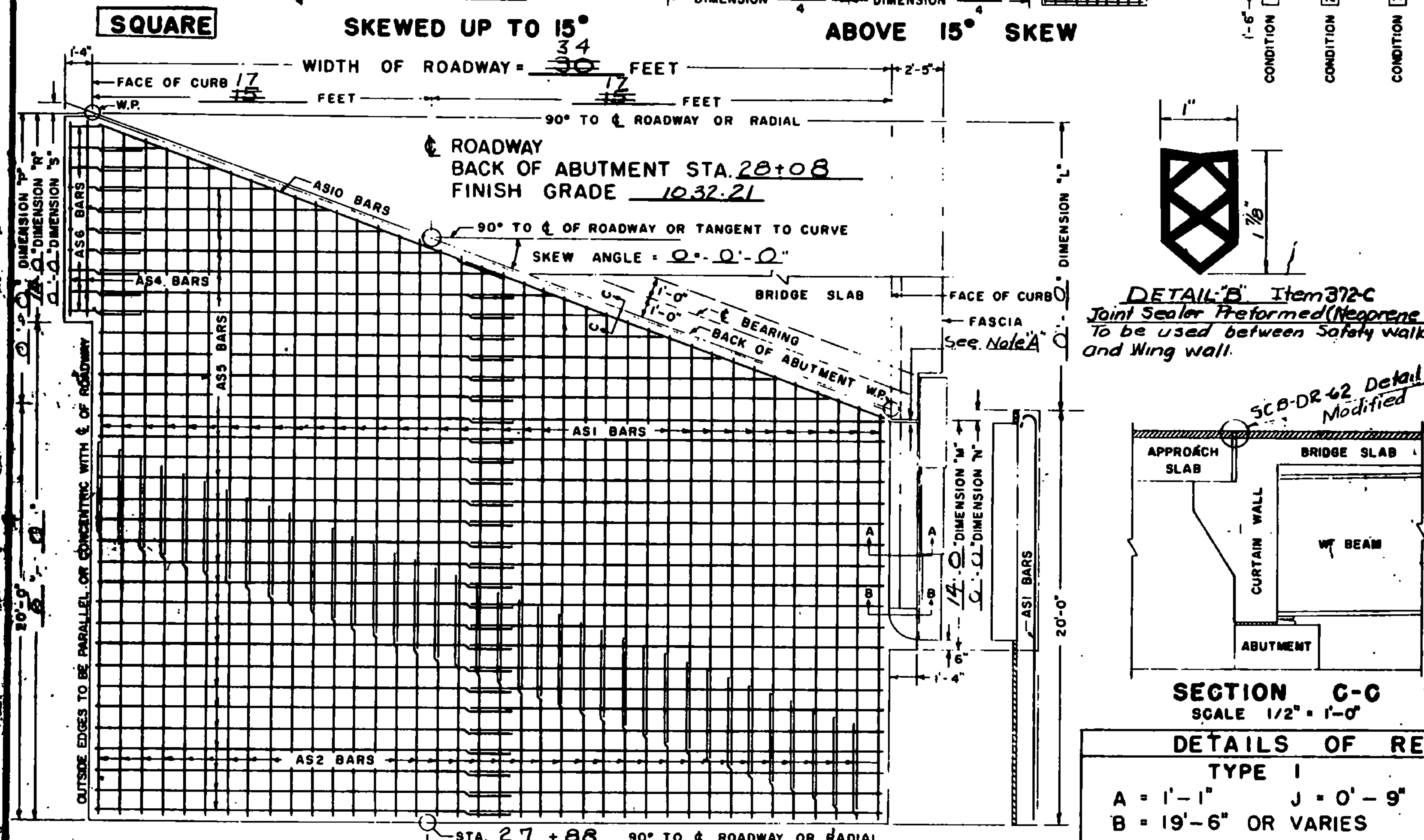
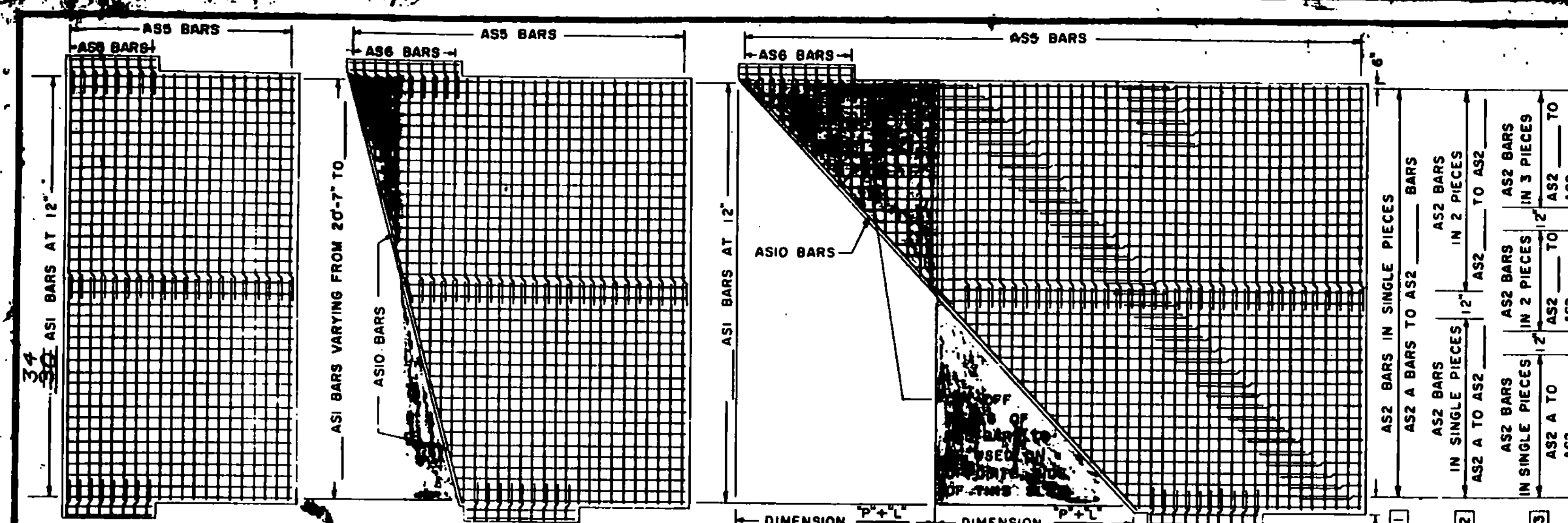
Recommended for Approval: R.H. Conrad 6/1/64  
Asst. Chief Engineer Date

Approved by: A.O. Sibley 6/1/64  
Chief Engineer Date

SURVEYED BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_  
PROJECT NO. F025-1(6)

SHEET 15 OF 10





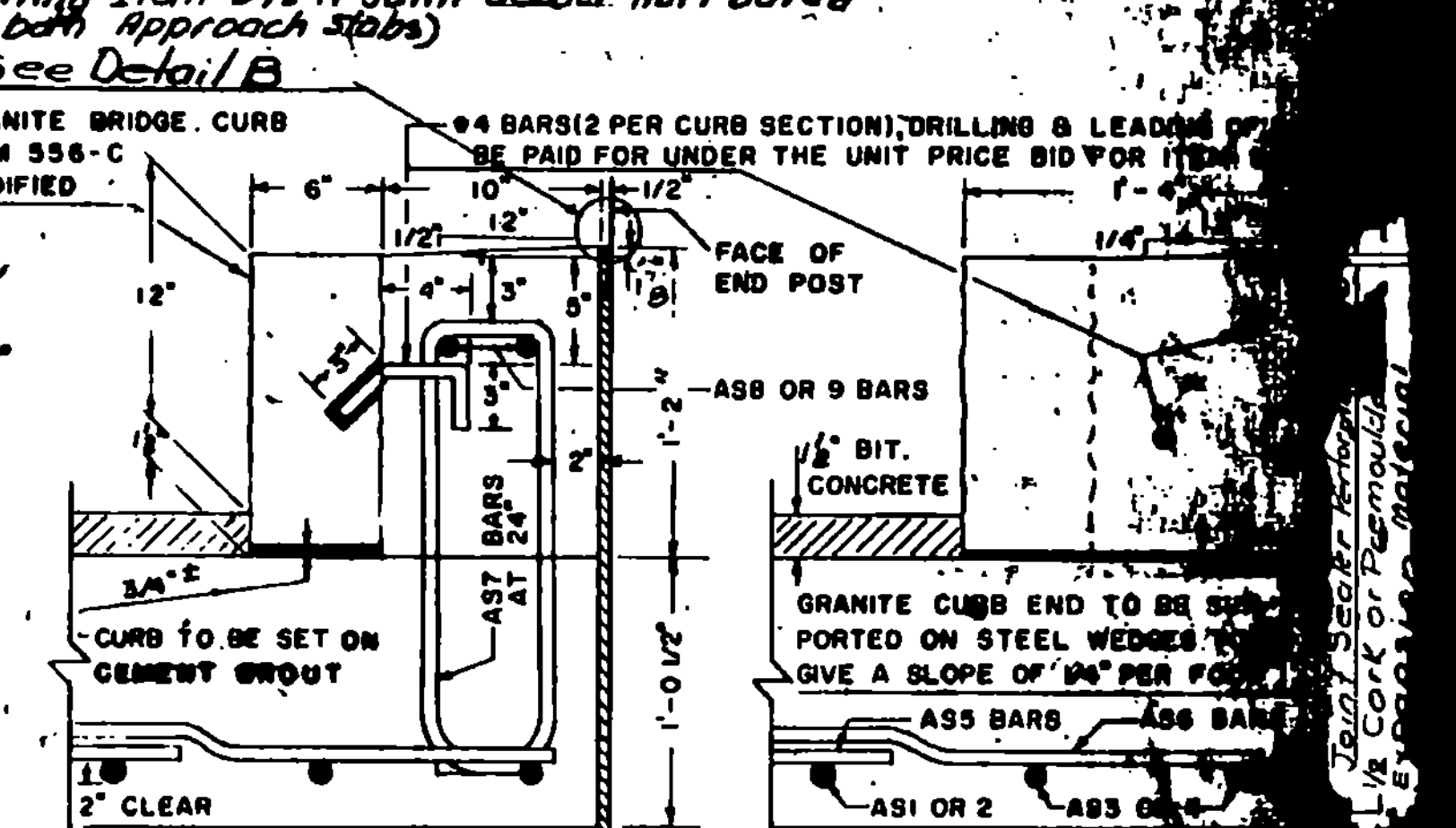
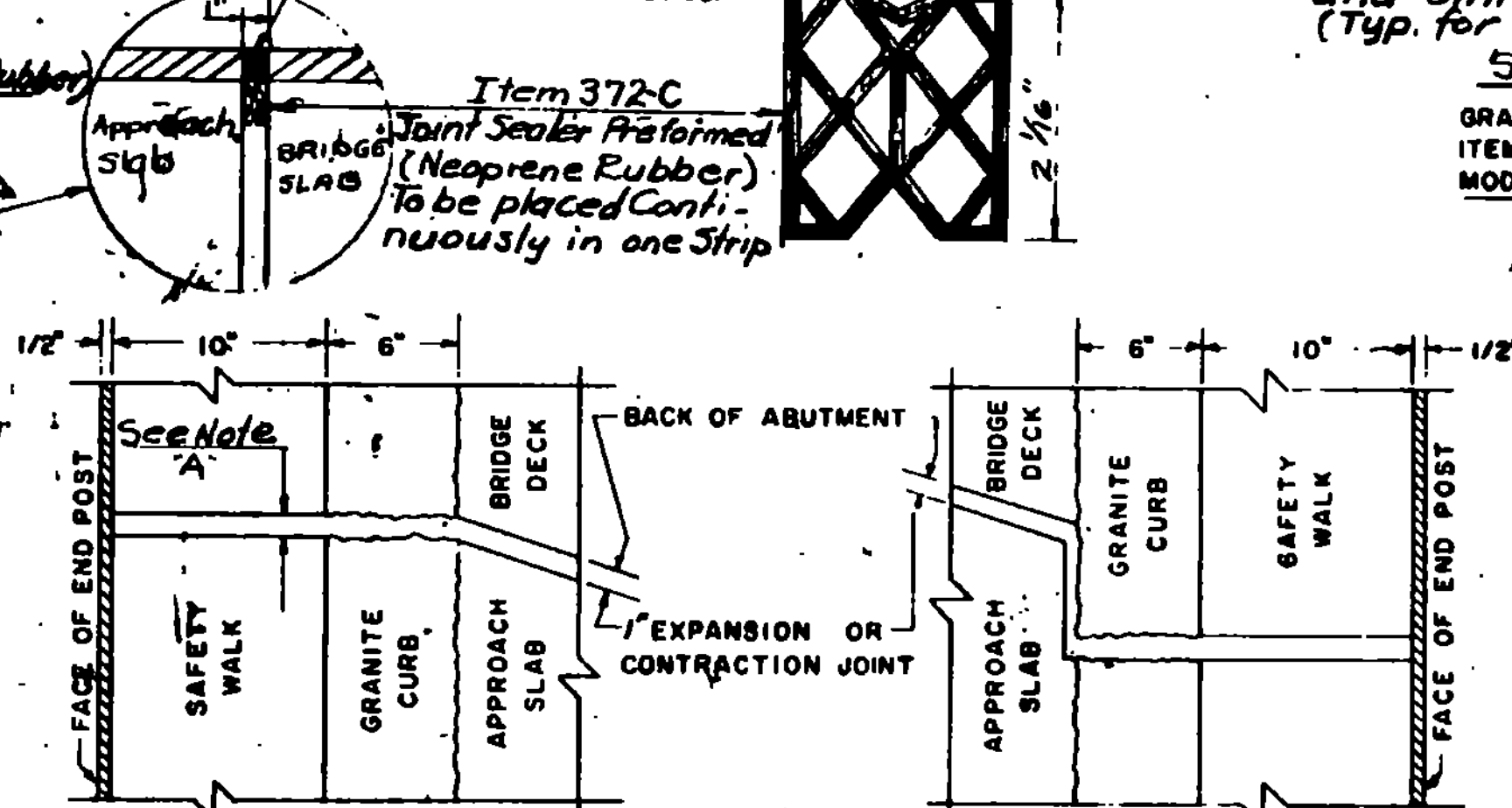
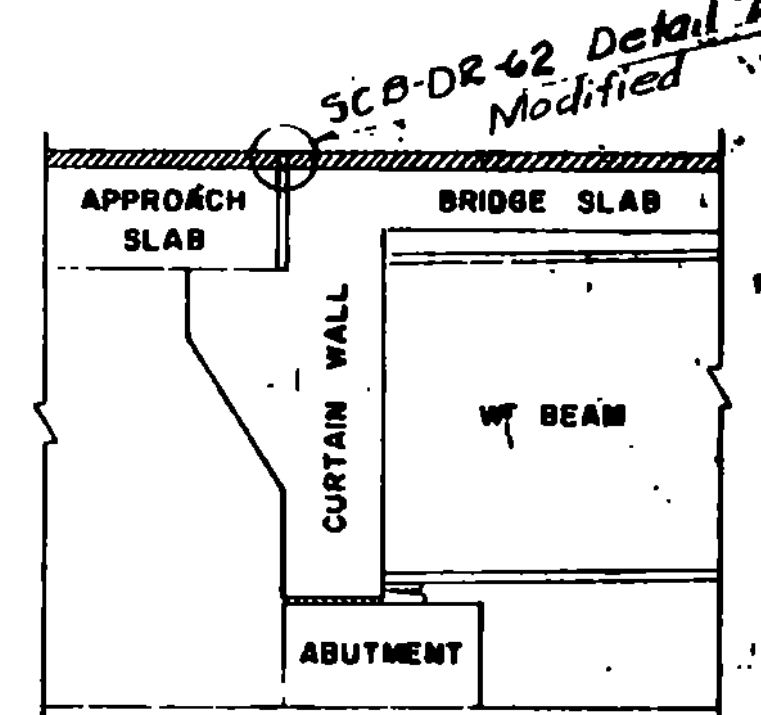
34' ROADWAY					38' ROADWAY					42' ROADWAY					44' ROADWAY					50' ROADWAY				
NO. PIECES	SIZE	LENGTH	MARK	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	REMARKS	NO. PIECES	SIZE	LENGTH	MARK	REMARKS
2	10	13-6"	AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.	2	10		AS3	STR.
2	10	13-6"	AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.	2	10		AS4	STR.
30	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.	5	3-6"	AS6	STR.
16	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	5	5-0"	AS7	S6
2	5	11-10	AS8	STR.	2	5		AS8	STR.	2	5		AS8	STR.	2	5		AS8	STR.	2	5		AS8	STR.
2	5	11-10	AS9	STR.	2	5		AS9	STR.	2	5		AS9	STR.	2	5		AS9	STR.	2	5		AS9	STR.
34	10	20-7"	AS1	I	38	10	20-7"	AS1	I	42	10	20-7"	AS1	I	44	10	20-7"	AS1	I	50	10	20-7"	AS1	I
20	5	19-9"	AS5	STR.	40	5	19-9"	AS5	STR.	40	5	21-9"	AS5	STR.	40	5	22-9"	AS5	STR.	5			AS5	STR.
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"	AVE. AS5	STR.	2.	5	19-9"	AVE. AS5	STR.	3.	5	21-9"	AVE. AS5	STR.	3.	5	22-9"	AVE. AS5	STR.	3.	5		AVE. AS5	STR.	3.

REMARKS: ● ASI BAR "B" DIMENSION VARIES FROM 19'-6" TO 30'. ● 20' + DIMENSION (P+L) ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES OPPOSITE HALF OF SLAB. ● 40' + DIMENSION (P+L) ÷ 2 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ● THE LENGTH OF AS2 BARS VARIES FROM 19'-9" TO 21'-9". 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 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 1956. DESIGNED FOR H20.

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 Hot Poured (Typ. for both Approach Slabs). See Detail B.

DETAIL B Item 372-C  
Joint Sealer Preformed (Neoprene Rubber)  
To be used between Safety walk  
and Wing wall.



DETAILS OF REINFORCING BARS				REINFORCING STEEL				QUANTITY COMPUTATION					
TYPE I		TYPE S6 C		A	B	C	A x B x C	WIDTH OF ROADWAY Z = 20 + DIMENSION (P+L) ÷ 4 T = DIMENSION					
A = 1'-1"	J = 0'-9"	A = 0'-6"	B = 1'-9"	BAR NO.	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	W = 34	Z = 20	T = 14.6			
B = 19'-6" OR VARIES		C = 0'-6"	D = 1'-9"	ASI	20-7"	4.303	200.22	BITUMINOUS CONCRETE • W x Z x 0.0028 = TONS 3430 = 20 x 0.0028 x 162					
		E = 0'-6"	G = 0'-6"	AS2		4.303	200.22	TAR EMULSION • W x Z x 0.0444 = GALLONS 3430 = 20 x 0.0444 x 162					
				AS3	13-6"	4.303	176.18	CONCRETE CLASS B • W x Z x 0.0386 + T x 0.1029 + (T - 1.8333) x 0.0733 = CUBIC YARDS					
				AS4	13-6"	4.303	176.18	[30 x 20 x 0.0386] + [14.6 x 0.1029] + [(14.6 - 1.8333) x 0.0733] = 272.20					
				AS5	20	1.043	208.60	GRANITE BRIDGE CURB • 2(T + 0-3') x LINEAR FEET 2(14.6 + 0.26) = 38.72					
				AS6	30	1.043	312.90	BAR LENGTHS: AS3 BARS • DIMENSION "M" - 0'-6" * One bar Added					
				AS7	16	1.043	166.88	AS4 BARS • DIMENSION "R" - 0'-6"					
				AS8	3	1.043	31.29	AS6 BARS • 3'-6"					
				AS9	2	1.043	20.86	AS7 BARS • 5'-0"					
				AS10		1.043	20.86	AS8 BARS • DIMENSION "M" - 2'-2"					
								AS9 BARS • DIMENSION "R" - 2'-2"					
ITEM NO.	ITEM	UNIT	TOTAL	FINAL	TOTAL WEIGHT = 3277.20								
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	2730	24									
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS	6	24									
401-B	CONCRETE CLASS B (MOD.)	CY.	272	28									
402	REINFORCING STEEL	LB.	3277	4255									
556-C	GRANITE BRIDGE CURB (MOD.)												

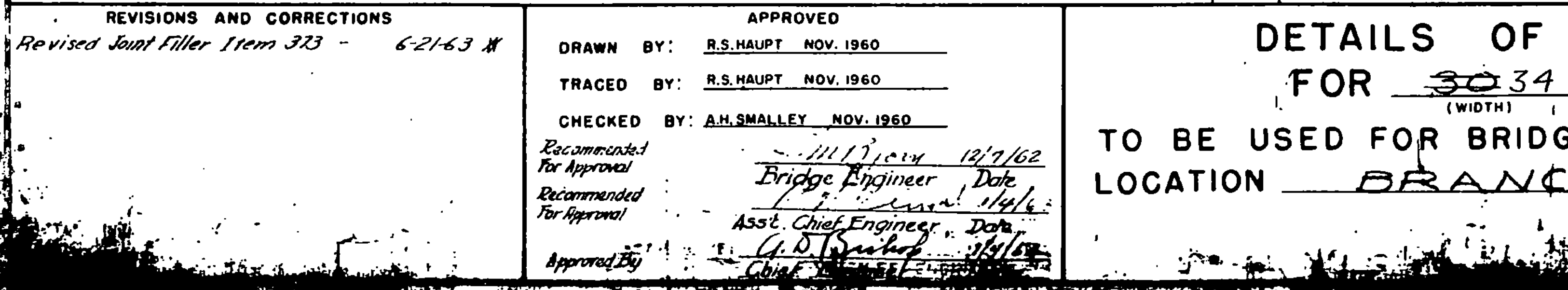
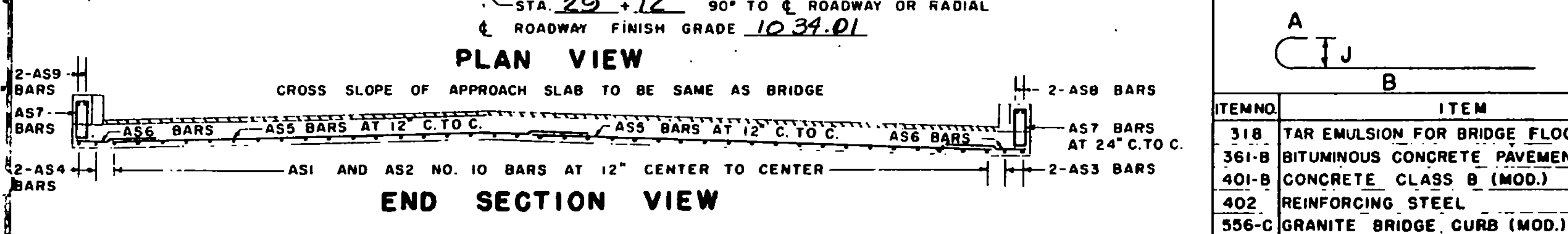
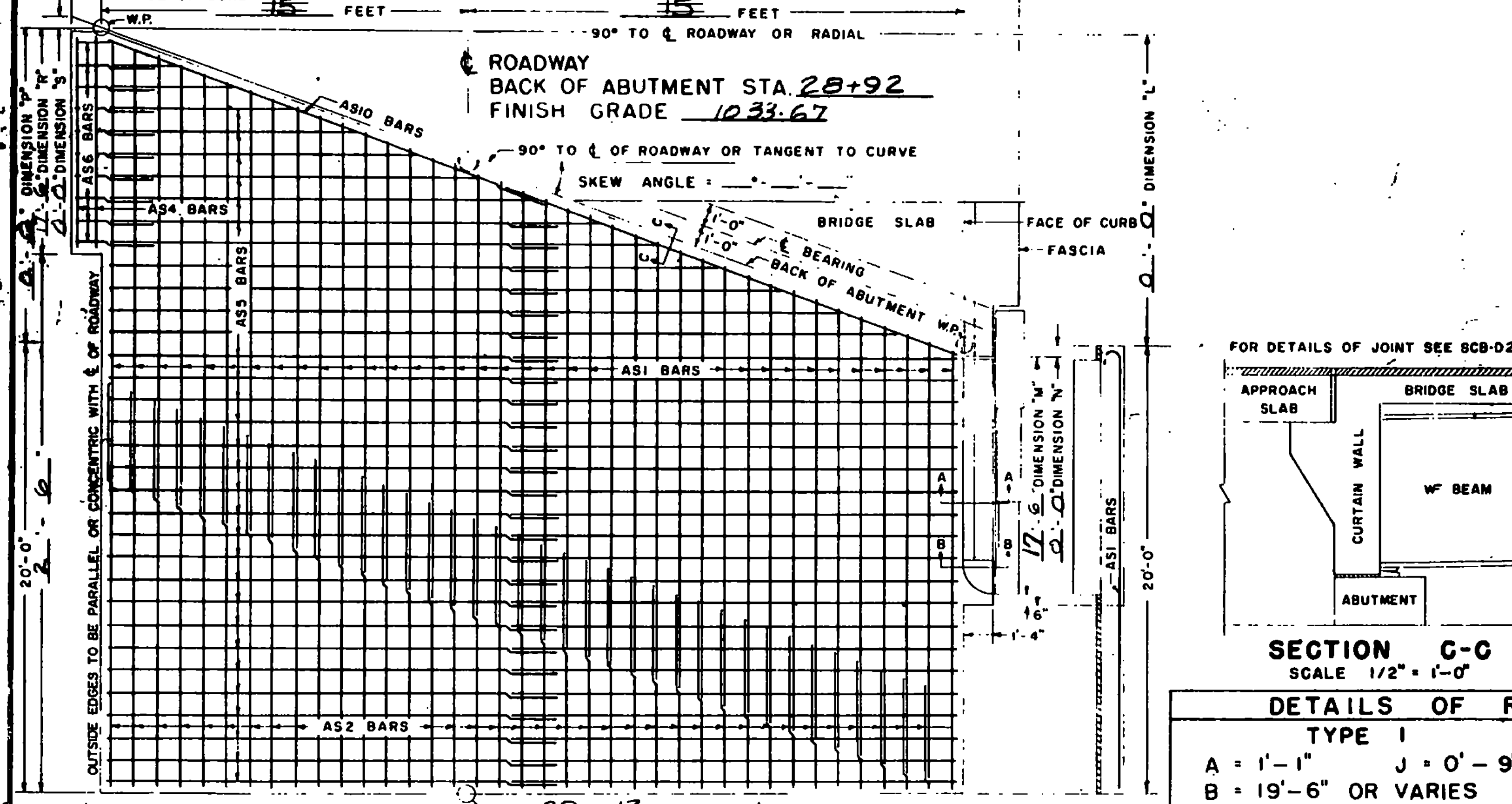
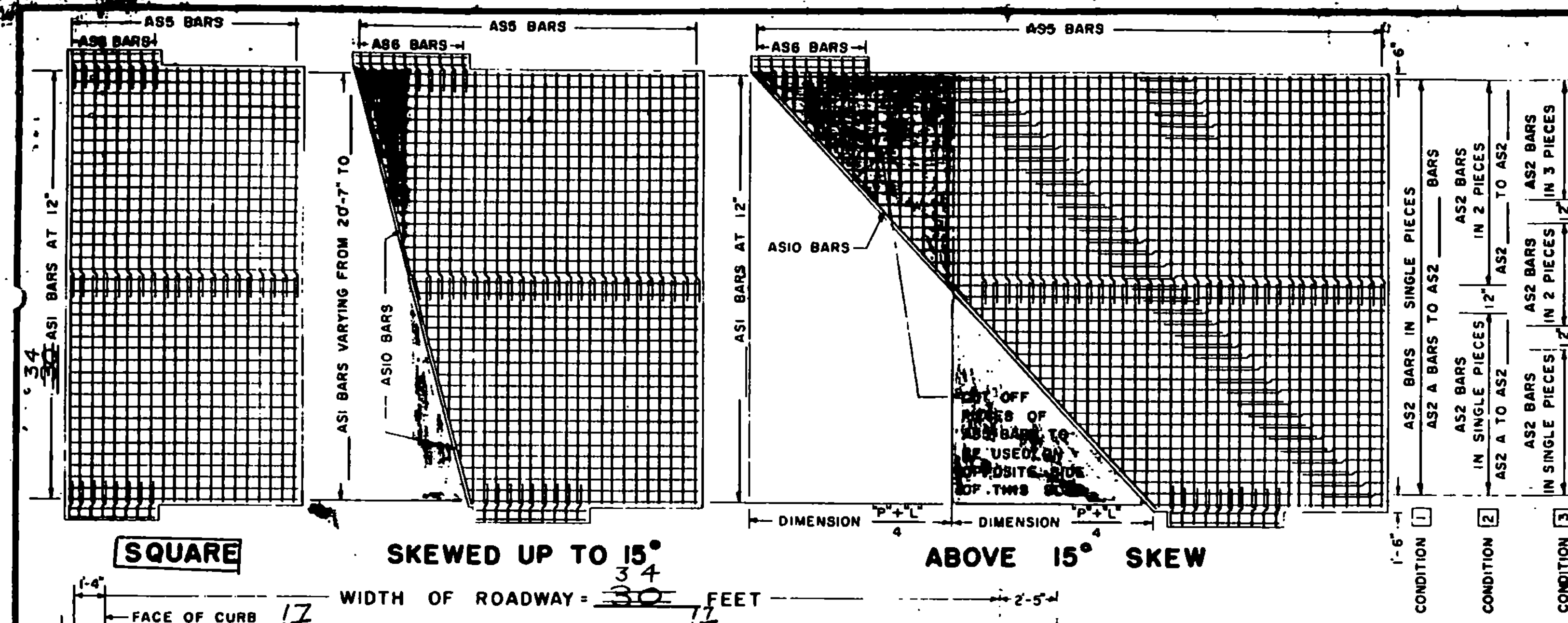
DETAILS OF APPROACH SLAB #1  
FOR 30' 34" FOOT BRIDGE  
(WIDTH)  
TO BE USED FOR BRIDGE AT STATION 28+50  
LOCATION BRANCH DROOK

STATE OF VERMONT  
DEPARTMENT OF HIGHWAYS  
STANDARD STRUCTURE  
TOWN OF MT. HOLLY  
ROUTE NO. VT. No. 10  
LOG STA. 1+37.7

REVISIONS AND CORRECTIONS  
Revised Joint Filler Item 373 - 6-21-63 M

APPROVED  
DRAWN BY: R.S. HAUPT NOV. 1960  
TRACED BY: R.S. HAUPT NOV. 1960  
CHECKED BY: A.H. SMALLEY NOV. 1960

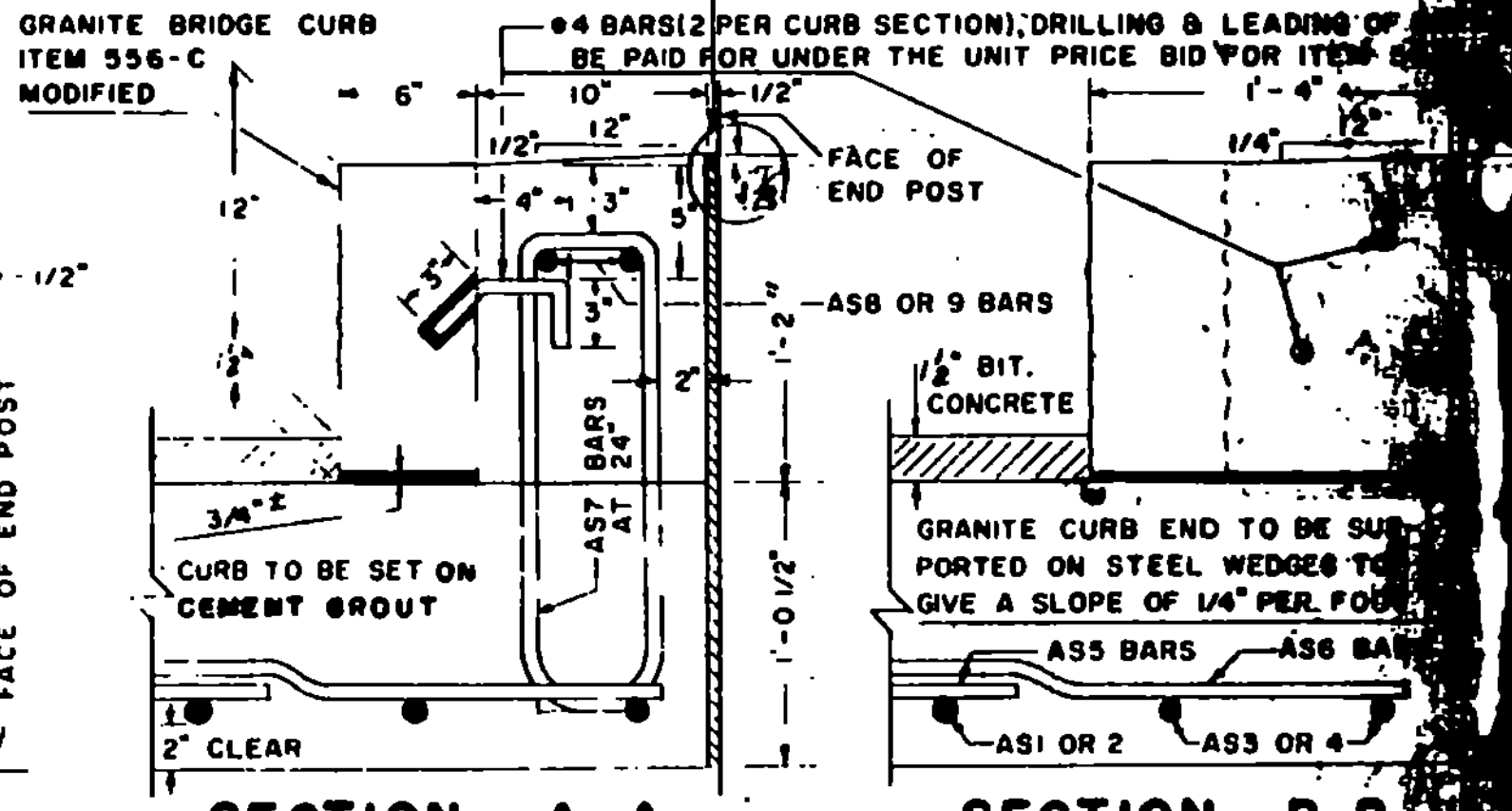
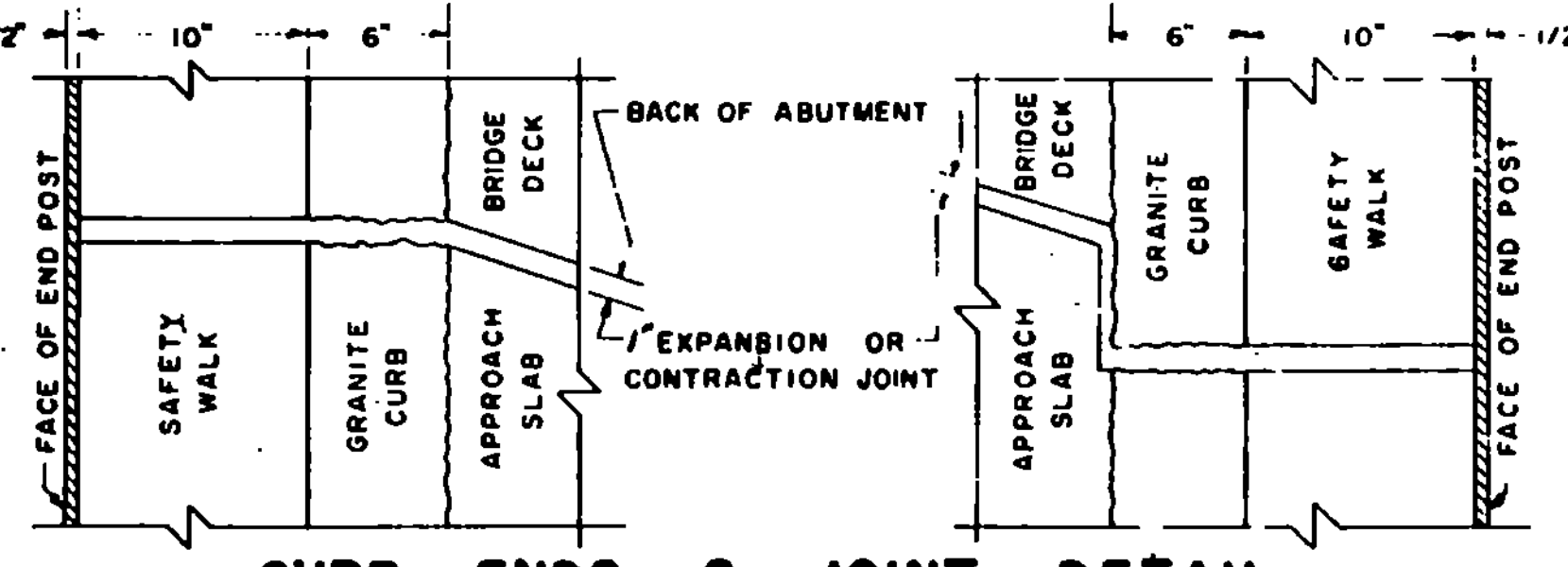
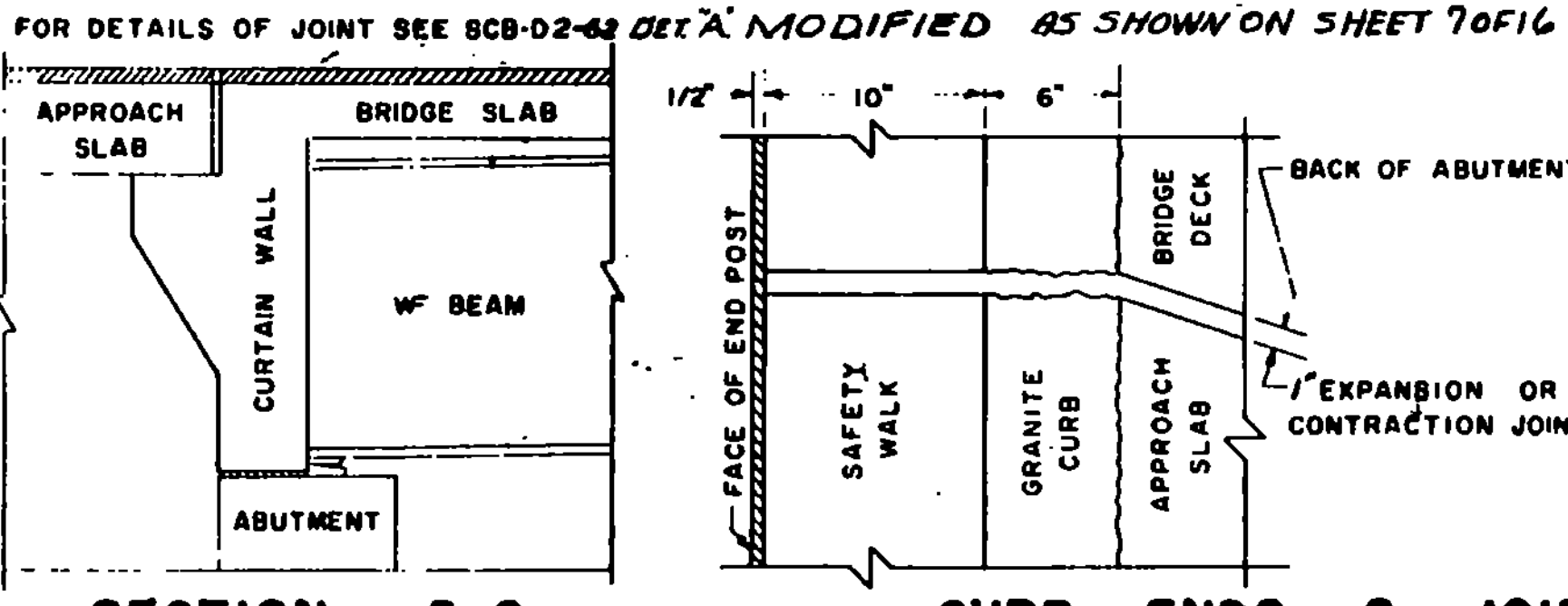
Recommended For Approval: [Signature] 10/9/62  
Recommended For Approval: [Signature] 10/14/62  
Approved By: [Signature] 10/16/62



34' 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							
SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED					SQUARE OR SKEWED														
2	10	17-0		AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.		2	10			AS3	STR.	
2	10	17-0		AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.		2	10			AS4	STR.	
30	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.	
20	5	3-0		AS7	STR.		5	3-0			AS7	STR.		5	3-0			AS7	STR.		5	3-0			AS7	STR.		5	3-0			AS7	STR.	
2	5	15-4		AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.	
2	5	15-4		AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.		2	5			AS9	STR.	
SQUARE					SQUARE					SQUARE					SQUARE					SQUARE														
38	10	20-7		AS1	STR.		38	10	20-7		AS1	STR.		42	10	20-7		AS1	STR.		44	10	20-7		AS1	STR.		10	20-7		AS1	STR.		
20	5	19-9		AS5	STR.		40	5	19-9		AS5	STR.		40	5	21-9		AS5	STR.		40	5	22-9		AS5	STR.		5	20-7		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	STR.	1		38	10	AVE.	AS1	STR.	1		42	10	AVE.	AS1	STR.	1		44	10	AVE.	AS1	STR.	1		10	AVE.	AS1	STR.	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	22-9		AS5	STR.	3	
ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS					ALL SKEWED SPANS														
2	5		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	20-7		AS1	STR.		38	10	20-7		AS1	STR.		42	10	20-7		AS1	STR.		44	10	20-7		AS1	STR.		10	20-7		AS1	STR.		
29	10	AVE.	AS2	STR.	4		37	10	AVE.	AS2	STR.	4		41	10	AVE.	AS2	STR.	4		43	10	AVE.	AS2	STR.	4		10	AVE.	AS2	STR.	4		
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	22-9		AS5	STR.	3	

REMARKS: ASI BAR "B" DIMENSION VARIES FROM 19'-6" TO 20'-0" DIMENSION (P+L) ÷ 4 (IN FEET) × NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. 40 + DIMENSION (P+L) ÷ 2 (IN FEET) × NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. THE LENGTH OF AS2 BARS VARIES FROM 19'-9" TO 21'-9". 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 1962. DESIGNED FOR M.E. 3/23/63



DETAILS OF REINFORCING BARS					REINFORCING STEEL					QUANTITY COMPUTATION															
TYPE I		TYPE S6 C			A		B		C		A X B X C		W = WIDTH OF ROADWAY			Z = 20 + DIMENSION "P" + "L"			T = DIMENSION "T"						
A	J	A	B	C	D	G	BAR NO.	NO. PIECES	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	W	Z	T	BITUMINOUS CONCRETE	TAR EMULSION	CONCRETE CLASS B	GRANITE BRIDGE CURB	BAR LENGTHS	AS3	AS4	AS6	AS7	AS8	AS9
1'-1"	0'-9"	0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS1	30	20-7	4.303	1290.90	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
B	19'-6" OR VARIES	0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS2	20	17-0	4.303	860.60	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
A		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS3	2	17-0	4.303	86.06	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
B		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS4	2	17-0	4.303	86.06	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS5	20	15-4	1.043	208.60	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS6	36	3-6	1.043	131.42	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS7	20	5-0	1.043	104.30	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS8	2	15-4	1.043	31.98	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS9	2	15-4	1.043	31.98	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	AS10	2	15-4	1.043	31.98	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"
		0'-6"	1'-9"	0'-6"	1'-9"	0'-6"	TOTAL WEIGHT				4301.94	30.34	20	17.5	31.38	2.730	2.730	2.730	2(17.5 + 0.25)	0'-6"	0'-6"	3'-6"	5'-0"	2'-2"	2'-2"

DETAILS OF APPROACH SLAB #2  
FOR 30.34 FOOT BRIDGE  
(WIDTH)  
TO BE USED FOR BRIDGE AT STATION 28+50  
LOCATION BRANCH BROOK

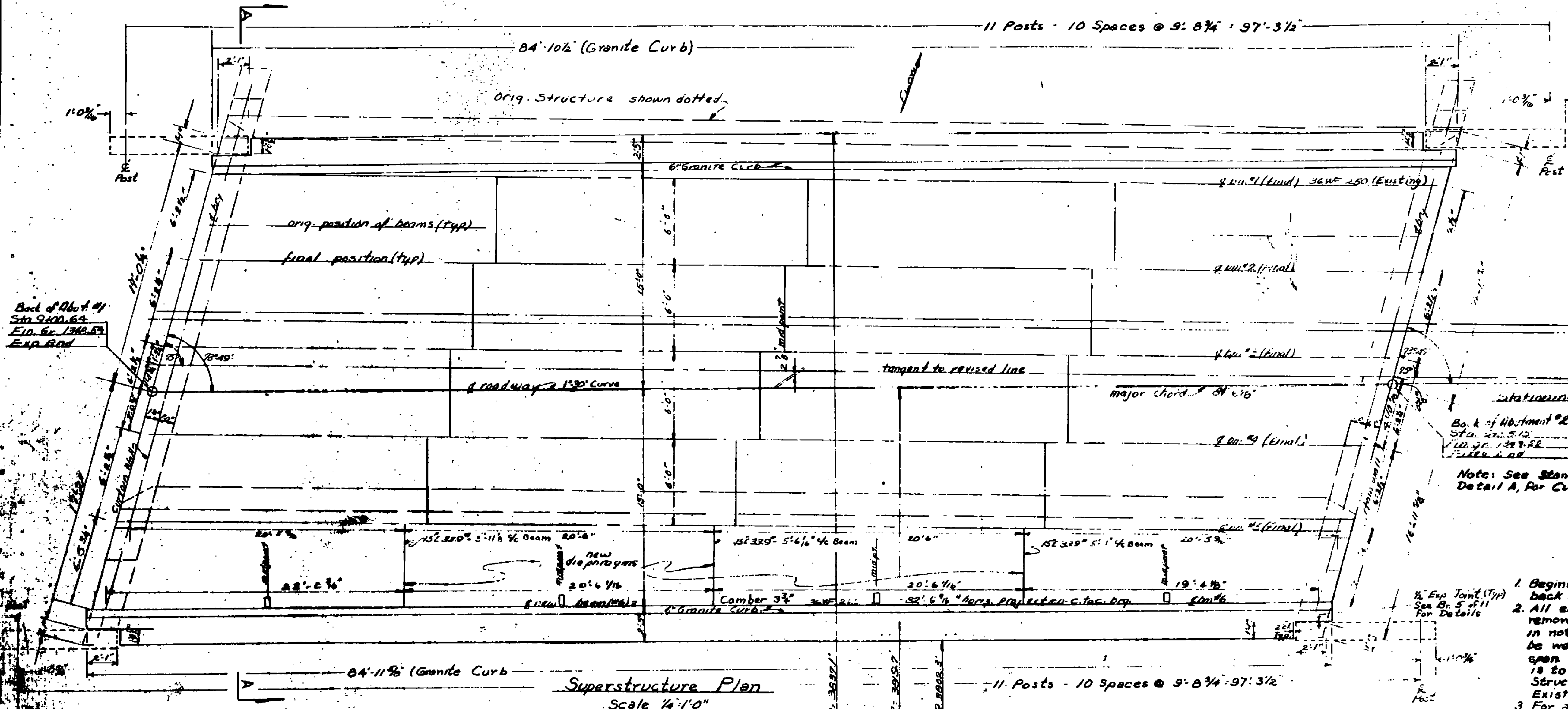
STATE OF VERMONT  
DEPARTMENT OF HIGHWAYS  
STANDARD STRUCTURE  
SB-AS-60  
SHEET 18 OF 40

TOWN OF MT. HOLLY, VT.  
ROUTE NO. VT 1001  
LOG STA. 1+30  
SCALE AS NOTED  
DESIGNED BY GYK CHEE  
3/23/63

REVISIONS AND CORRECTIONS  
Revised Joint Filler Item 323 - 6-21-63 M

APPROVED  
DRAWN BY: R.S. NAUPT NOV. 1960  
TRACED BY: R.S. NAUPT NOV. 1960  
CHECKED BY: A.H. SMALLEY NOV. 1960

Recommended For Approval  
Recommended For Approval  
Approved By: G.D. [Signature] 11/17/63



**List of Bridge Sheets**

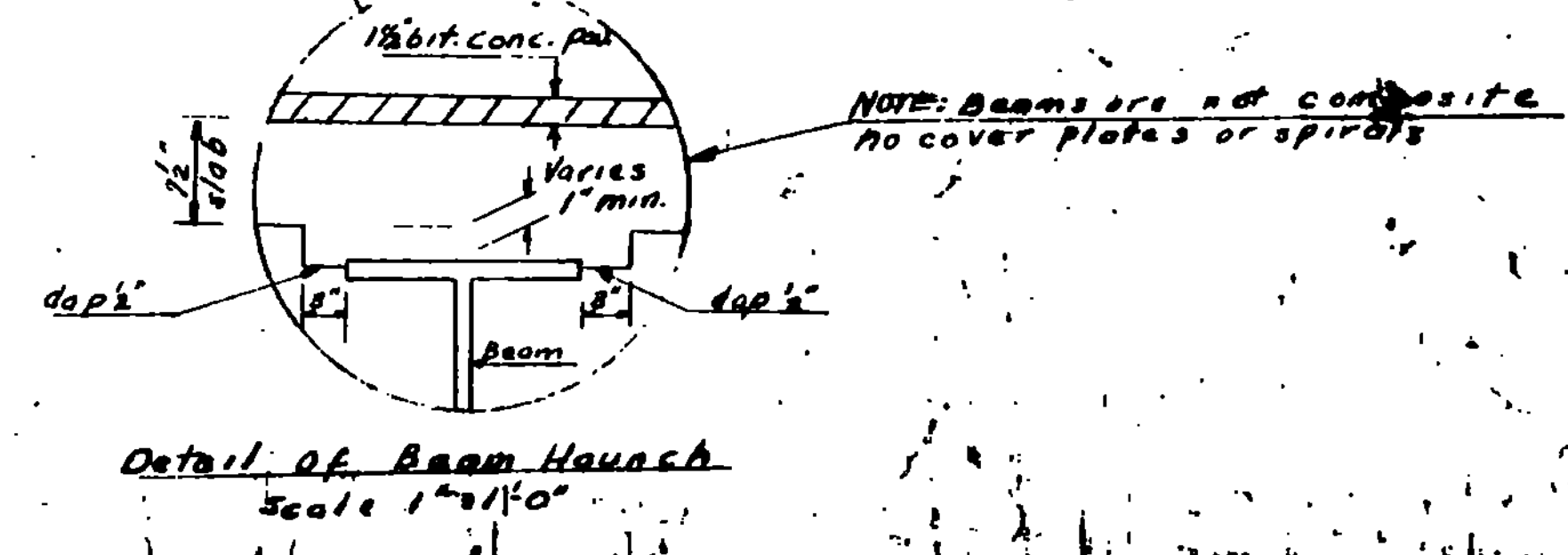
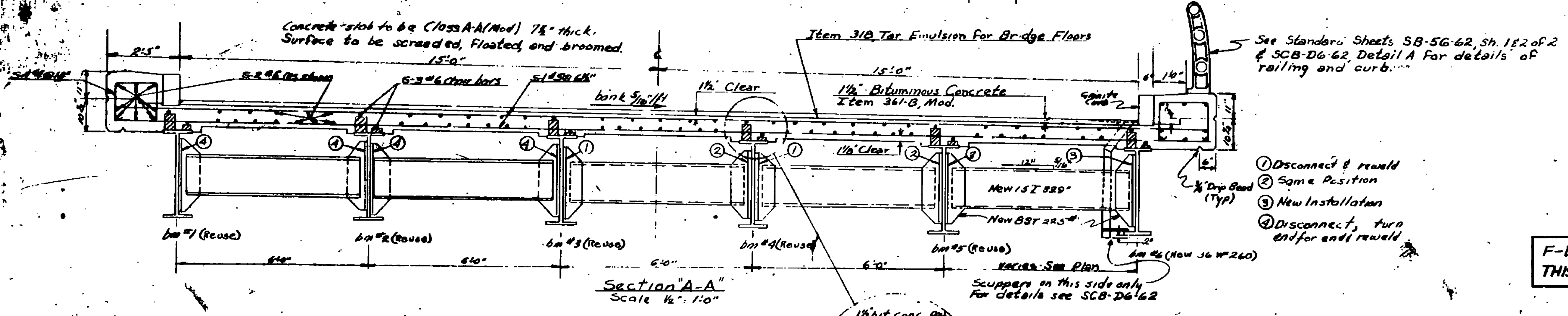
Br. 1 of 11 Superstructure Details  
 Br. 2 of 11 Earthwork and Bridge Quantity Sheet  
 Br. 3 of 11 Details of Abutment #1  
 Br. 4 of 11 Details of Abutment #2  
 Br. 5 of 11 Approach Slab #1  
 Br. 6 of 11 Approach Slab #2  
 Br. 7 of 11 Reinforcing Steel Schedule  
 Br. 8 of 11 Channel Sections

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

Original bridge survey lines  
 Revised & tangent  
 Stationing  
 Back of Abutment #2  
 Sta. 940.512  
 Elev. 134.787  
 Exp. End

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. 943 (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 swedge bolts are to be furnished for all existing beam bearings. All existing bearings are to be reused. Note extra long swedge bolts.
  - The present slab 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 520 Hand Cleaning & Painting of Structural Steel.
  - For additional General Notes see Standard Sheet SCB-D1-62.

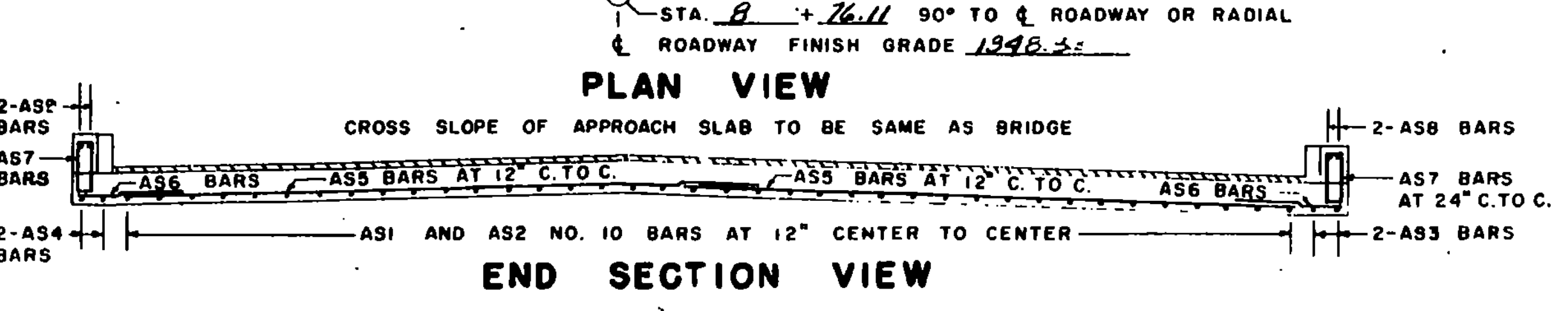
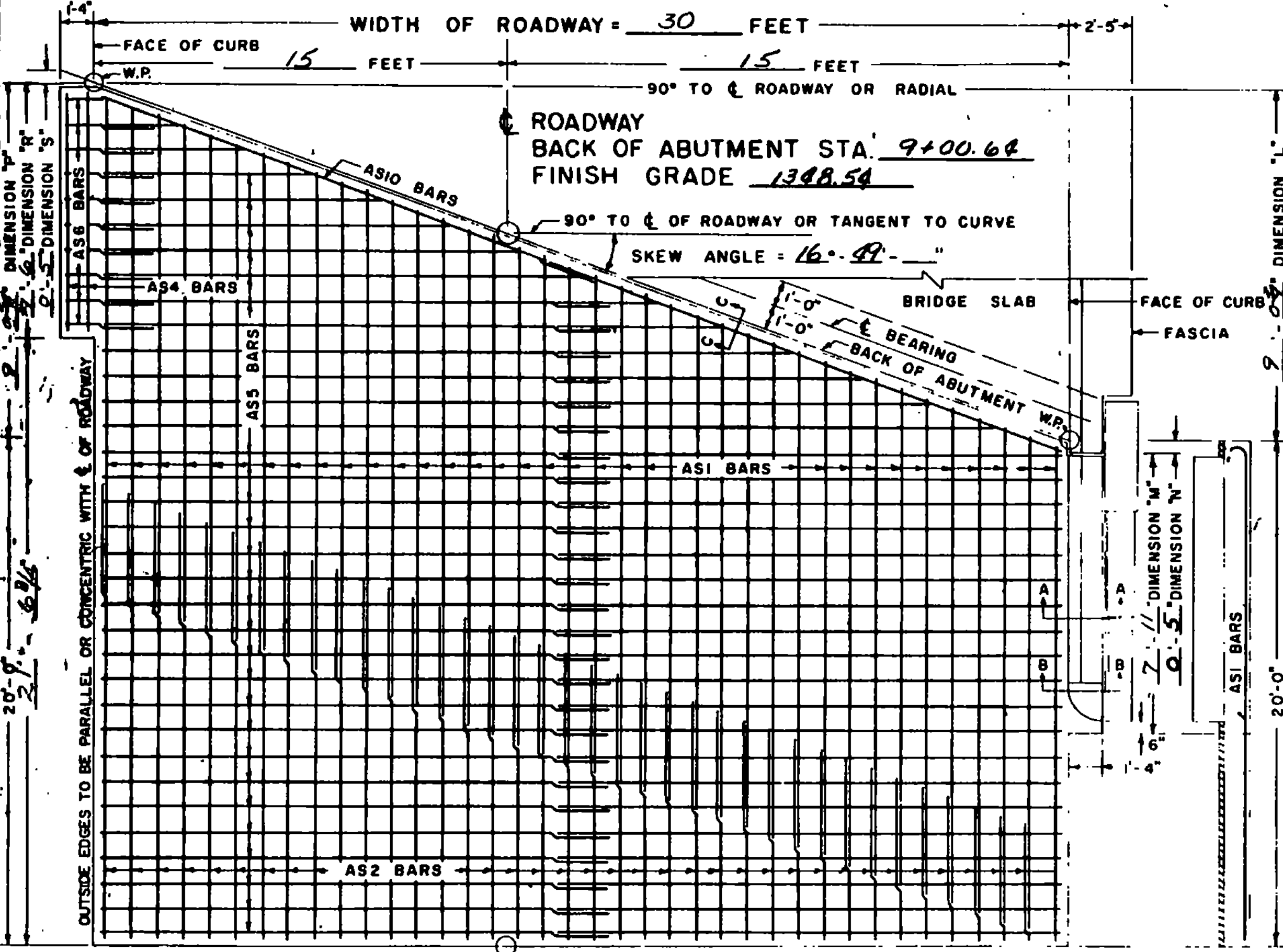
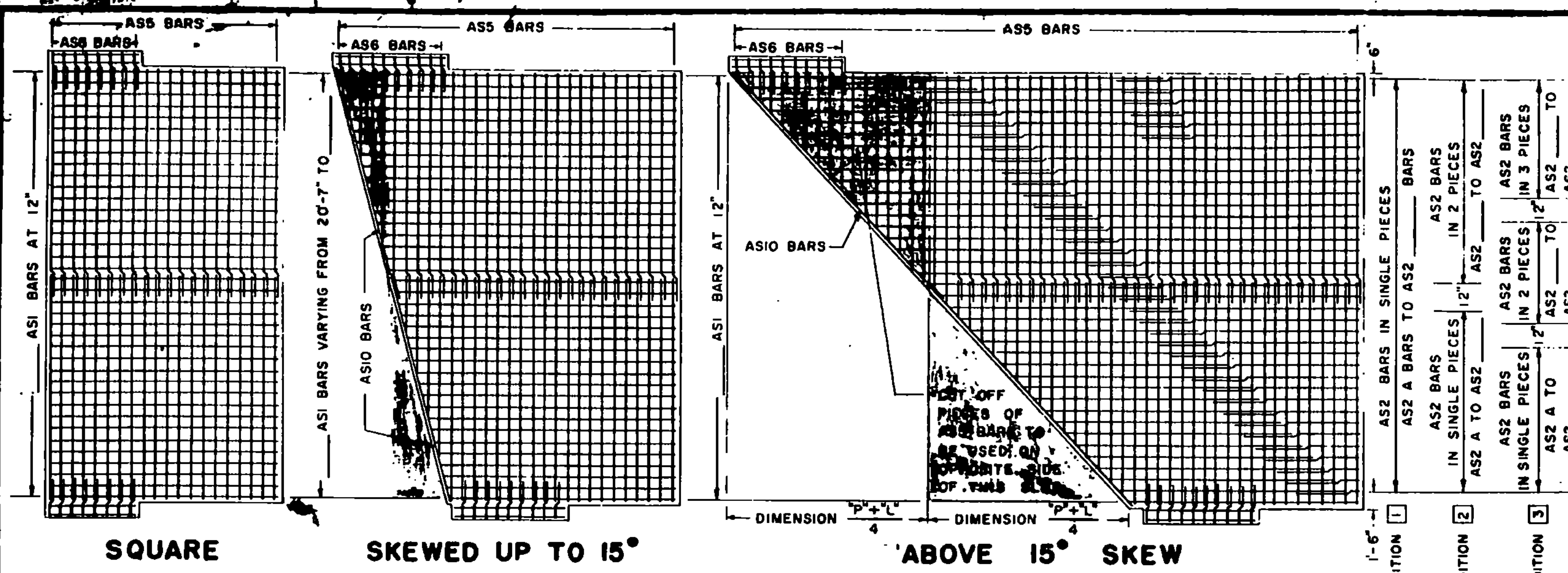


F-DECK (22)S, BR. #33  
 THIS SHEET FOR INFORMATION ONLY

STATE OF VERMONT  
 DEPARTMENT OF HIGHWAYS

TOWN OF Mt. Holly - Ludlow  
 ROUTE No. VT. 103 LOG STA. 4+00  
 SUPERSTRUCTURE  
 (Branch Brook)  
 SCALE 1/2" = 1'-0"  
 SURVEYED BY A. B. WARD  
 DRAWN BY J. E. ...  
 PROJECT ...

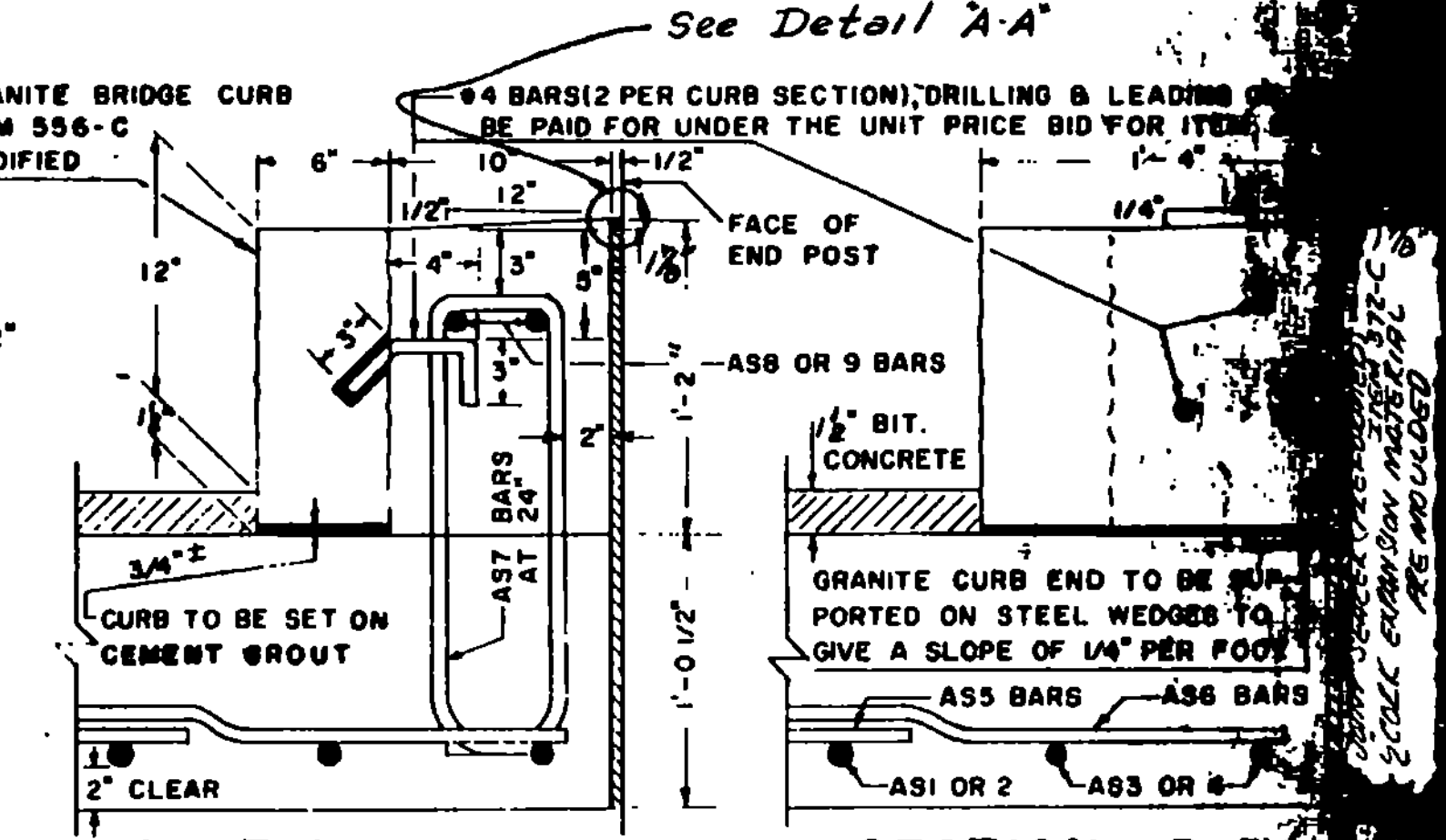
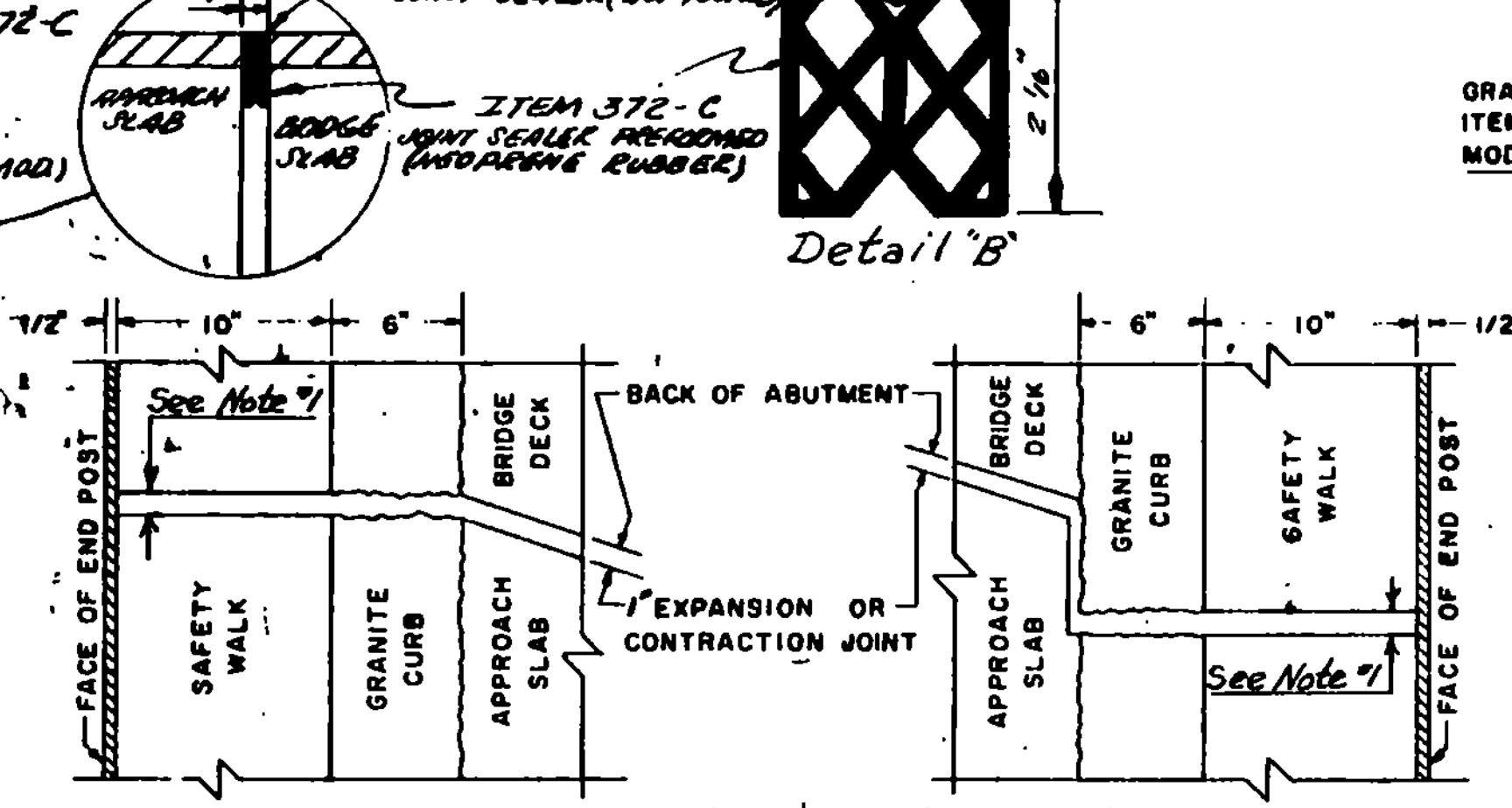
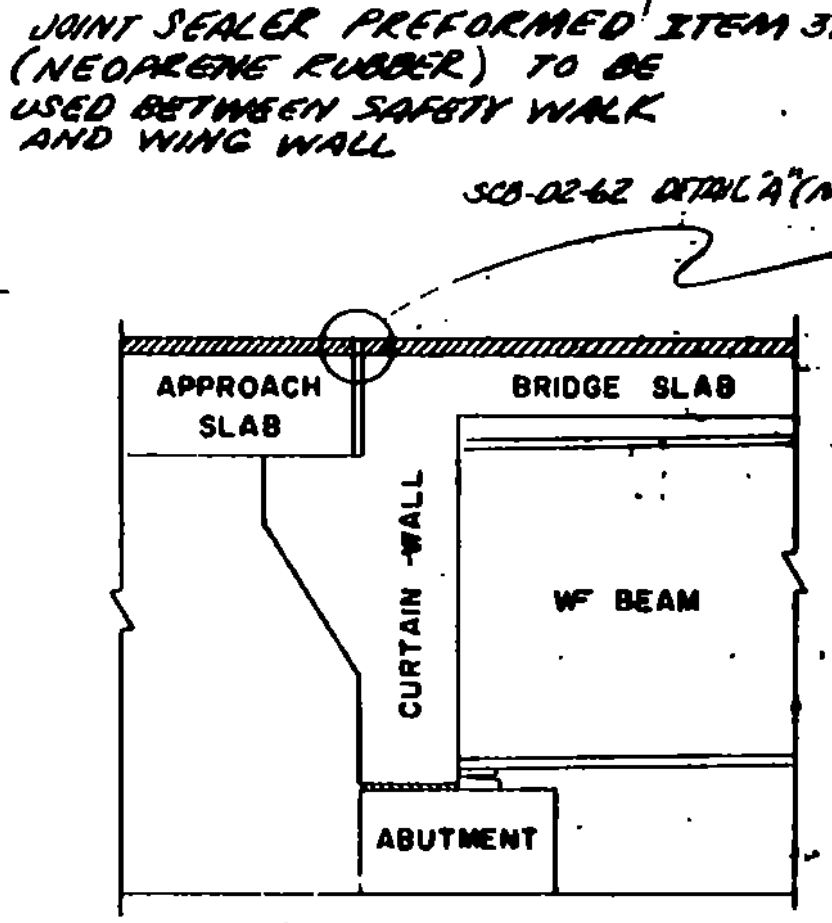
SHEET # 40



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							
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	7.5"		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	5-3"		AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.		2	5			AS8	STR.	
2	5	5-1"		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		38	10			AVE. AS1	I		42	10			AVE. AS1	I		44	10			AVE. AS1	I		10				AVE. AS1	I	
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	30-10"		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	25-1"		AVE. 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	
2.5	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 28'-6" ● 20 + DIMENSION (P+L) ÷ 4 (IN FEET) × NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES ON OPPOSITE HALF OF SLAB. ● 40 + DIMENSION (P+L) ÷ 2 (IN FEET) × NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES 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 & 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 SPICES 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 MS. Note #1: Use Item 372-C Detail 'B' for joint in curb. Omit the Hot Poured Sealer, and place the material flush with the surfaces.



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"

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

DETAILS OF REINFORCING BARS				REINFORCING STEEL				QUANTITY COMPUTATION										
TYPE I		TYPE S6 C		A		B		C		A X B X C		W		Z		T		
A	J	A	B	BAR NO.	NO. PIECES	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	BAR NO.	NO. PIECES	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	BAR NO.	NO. PIECES	LENGTH	WEIGHT PER FT.	
A = 1'-1"	J = 0'-9"	A = 0'-5"	B = 1'-9"	AS1	30	25'-1" AVE.	4.303	3237.58	AS3	16	3'-6"	1.043	58.41	AS4	2	7'-0"	4.303	60.24
B = 19'-6" OR VARIES		C = 0'-6"	D = 1'-9"	AS5	25	29'-6"	1.043	769.21	AS6	10	5'-0"	1.043	52.15	AS7	2	5'-9"	1.043	11.99
		E = 0'-6"	G = 0'-6"	AS8	2	5'-4"	1.043	11.13	AS9	2	5'-4"	1.043	11.13	AS10	2	30'-10"	1.043	64.31
				TOTAL WEIGHT = 4360.80														
ITEM NO.	ITEM	UNIT	TOTAL	FINAL														
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	30	30														
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														

REVISIONS AND CORRECTIONS  
 Required Joint Filler Item 373 - 6-21-63 M

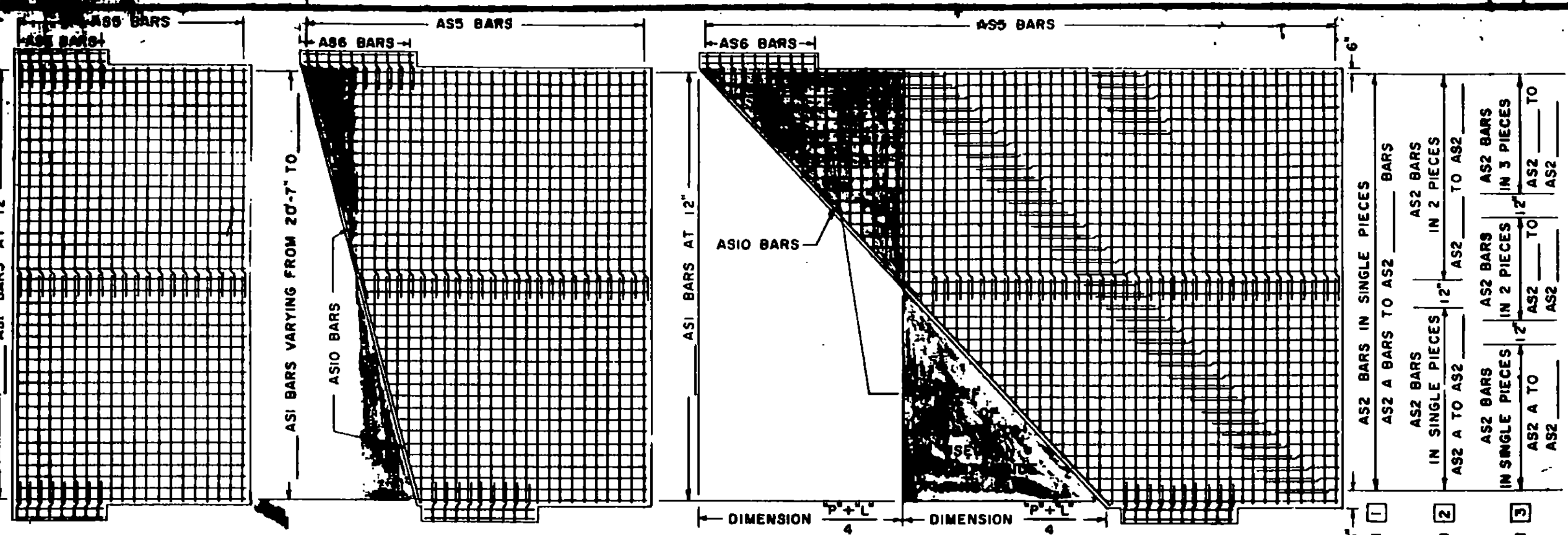
APPROVED  
 DRAWN BY: R.S. HAUPT NOV. 1960  
 TRACED BY: R.S. HAUPT NOV. 1960  
 CHECKED BY: A.H. SMALLEY NOV. 1960

Recommended For Approval  
 Recommended For Approval  
 Approved By

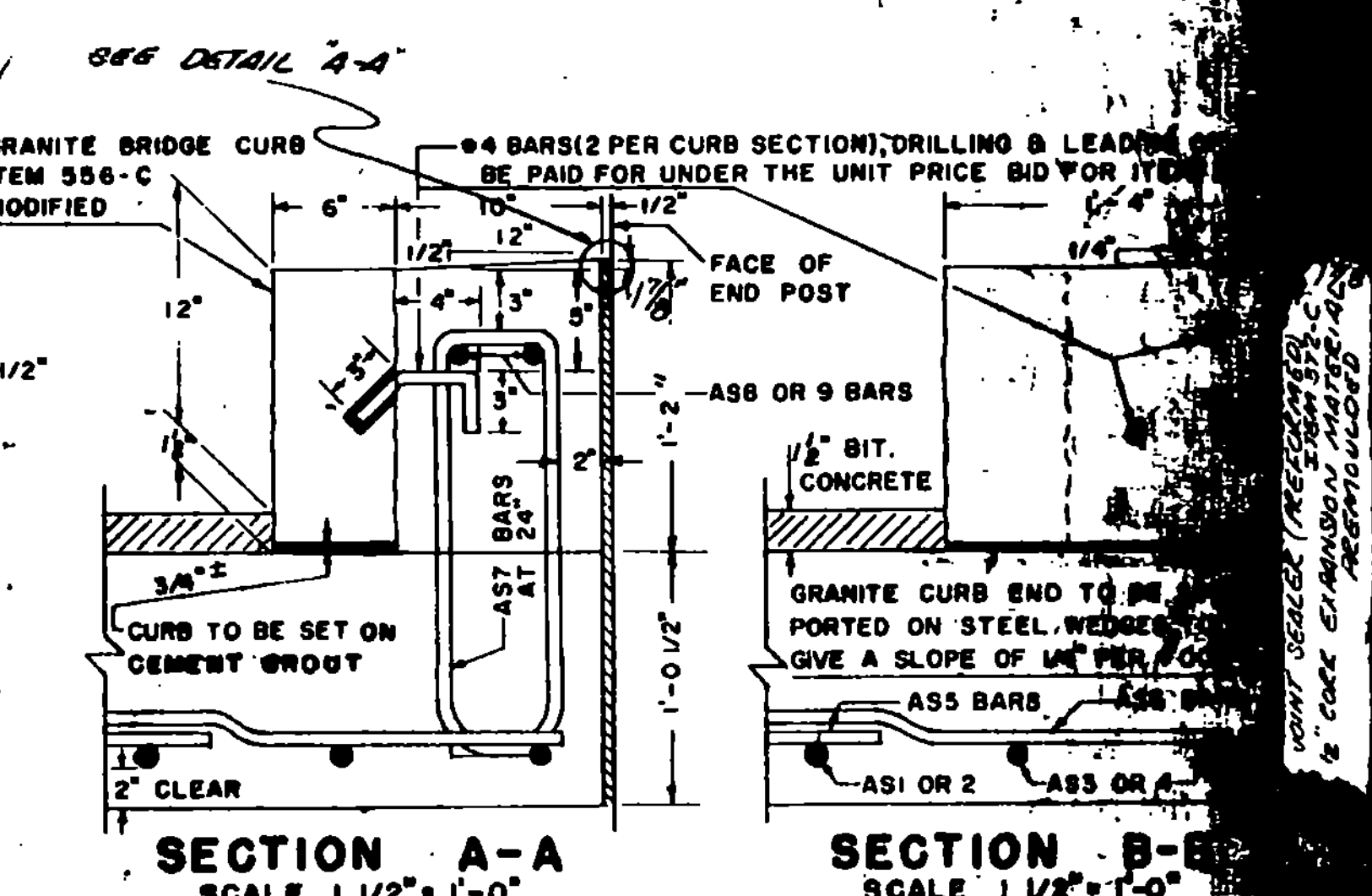
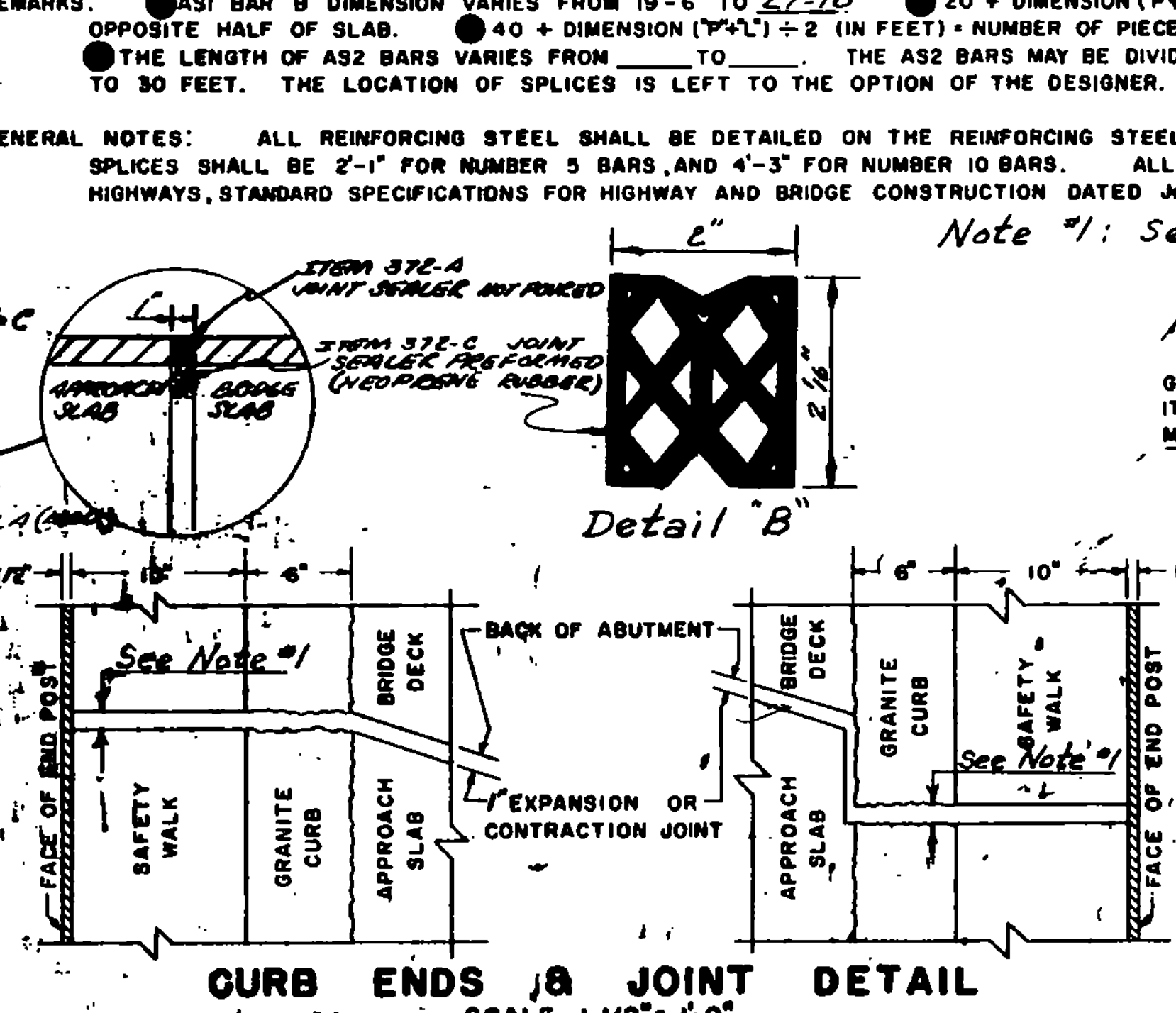
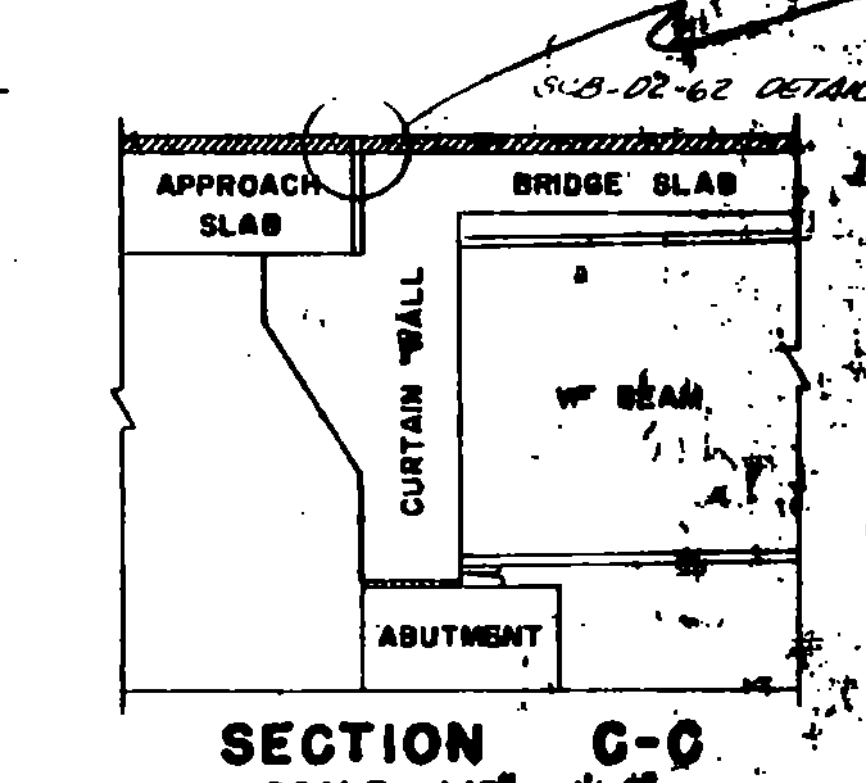
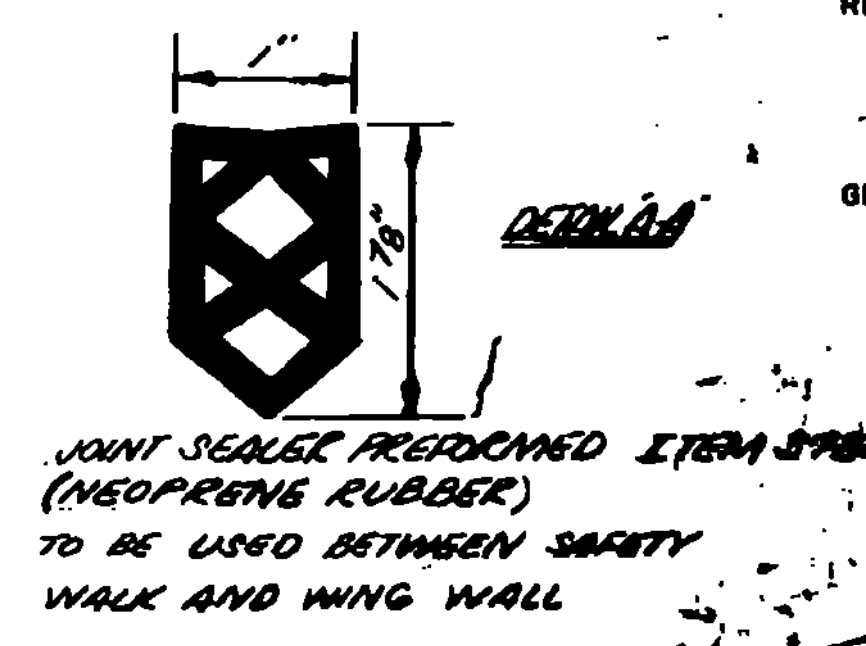
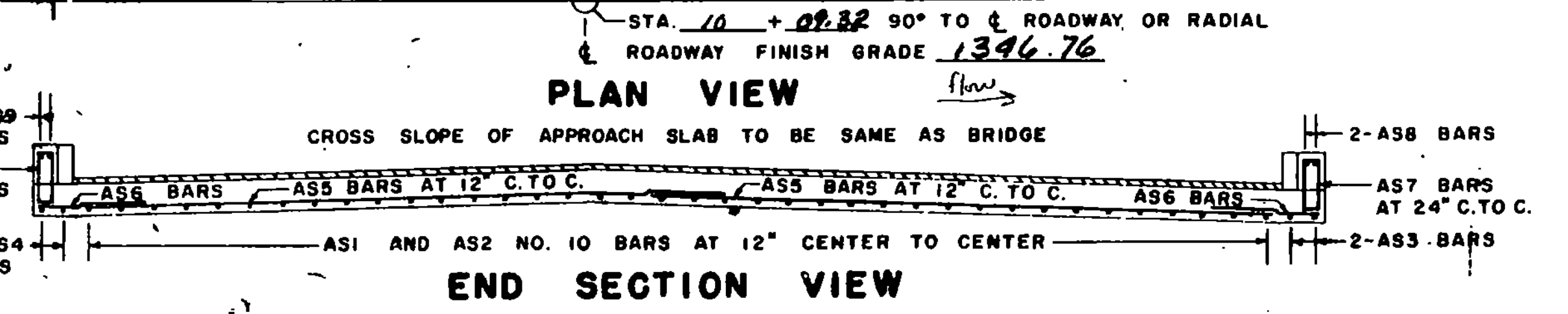
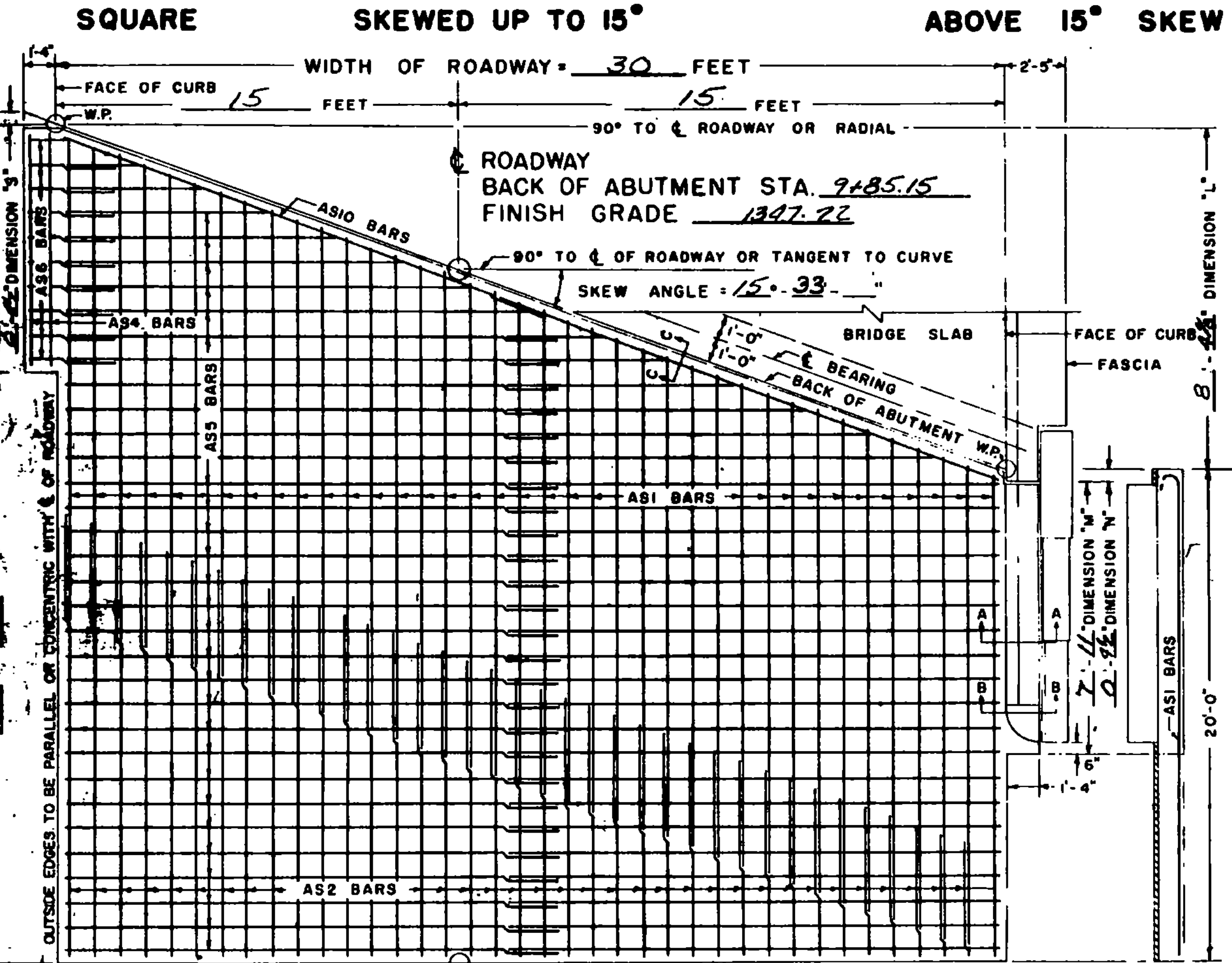
DETAILS OF APPROACH SLAB NO. 1  
 FOR 30 FOOT BRIDGE  
 (WIDTH)  
 TO BE USED FOR BRIDGE AT STATION 8+76.11  
 LOCATION BRANCH BROOK

STATE OF VERMONT  
 DEPARTMENT OF HIGHWAYS  
 STANDARD STRUCTURE  
 SB-AS-60  
 SHEET 20 OF 47

TOWN OF MT. HOLLY  
 ROUTE NO. VT #10  
 LOG STA. 5.5+39  
 SCALE AS NOTED  
 DESIGNED BY S.H.S. CHECKED  
 PROJECT NO.



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		AS3	STR.	
2	10	7'-0"	AS4	STR.		2	10		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.		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		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		AS8	STR.	
2	5	5'-4"	AS9	STR.		2	5		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		38	10	Ave. AS1	I		42	10	Ave. AS1	I		44	10	Ave. AS1	I		10	Ave. AS1		I												
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.	3.										
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		38	10	20'-7"	AS1	I		42	10	20'-7"	AS1	I		44	10	20'-7"	AS1	I		10	20'-7"		AS1	I							
5	29'-6"	AS5	STR.	2.	5	19'-9"	AS5	STR.	3.	4	21'-9"	Ave. AS2	STR.	4.	4	22'-9"	Ave. AS2	STR.	4.	4	22'-9"	Ave. AS2	STR.	4.											



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 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 1962. DESIGNED FOR HED.

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

DETAILS OF REINFORCING BARS				REINFORCING STEEL				QUANTITY COMPUTATION							
TYPE I		TYPE S6 C		A	B	C	A X B X C	W	Z	T	DIMENSION				
BAR NO.	PIECES	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	BAR NO.	PIECES	LENGTH	WEIGHT PER FT.	WEIGHT IN LBS.	W	Z	T	DIMENSION		
AS1	30	24'-9" Ave	4.303	3194.98	AS7	10	5'-0"	1.043	52.16	30	24.17	18.72	W = WIDTH OF ROADWAY		
AS2	25	29'-6"	1.043	769.21	AS8	2	5'-9"	1.043	11.99	30	24.17	0.0444	Z = 20 + DIMENSION (P+L) ÷ 4		
AS3	2	7'-5"	4.303	62.81	AS9	2	5'-4"	1.043	11.13	30	24.17	0.0386	T = DIMENSION		
AS4	2	7'-0"	4.303	60.24	AS10	2	30'-8"	1.043	63.97	BITUMINOUS CONCRETE = W x Z x 0.0022 = TONS			T = DIMENSION		
AS5	25	29'-6"	1.043	769.21	TOTAL WEIGHT = 4285.89			CONCRETE CLASS B = W x Z x 0.0386 + T x 0.1029 + (T - 1.8333) x 0.0733 = CUBIC YARDS			CONCRETE CLASS B = 30 x 24.17 x 0.0386 + [ 7.73 x 0.1029 ] + [ ( 27.3 - 1.8333 ) x 0.0733 ] = 30 CUBIC YARDS				
AS6	10	3'-6"	1.043	58.41	GRANITE BRIDGE CURB = 2(T + 0'-5") x LINEAR FEET			GRANITE BRIDGE CURB = 2( 27.3 + 0.25 ) = 116 LINEAR FEET			GRANITE BRIDGE CURB = 2(T + 0'-5") x LINEAR FEET				
AS7	10	5'-0"	1.043	52.16	BAR LENGTHS: AS3 BARS = DIMENSION "M" - 0'-6"			BAR LENGTHS: AS3 BARS = DIMENSION "M" - 0'-6"			BAR LENGTHS: AS3 BARS = DIMENSION "M" - 0'-6"				
AS8	2	5'-9"	1.043	11.99	AS4 BARS = DIMENSION "R" - 0'-6"			AS4 BARS = DIMENSION "R" - 0'-6"			AS4 BARS = DIMENSION "R" - 0'-6"				
AS9	2	5'-4"	1.043	11.13	AS6 BARS = 3'-6"			AS6 BARS = 3'-6"			AS6 BARS = 3'-6"				
AS10	2	30'-8"	1.043	63.97	AS7 BARS = 5'-0"			AS7 BARS = 5'-0"			AS7 BARS = 5'-0"				
556-C	GRANITE BRIDGE CURB (MOD.)	LF.		161	16	AS8 BARS = DIMENSION "M" - 2'-2"			AS8 BARS = DIMENSION "M" - 2'-2"			AS8 BARS = DIMENSION "M" - 2'-2"			

REVISIONS AND CORRECTIONS  
 Revised Joint Filler Item 323 - 6-21-63 M

APPROVED  
 DRAWN BY: R.S. HAUPT NOV. 1960  
 TRACED BY: R.S. HAUPT NOV. 1960  
 CHECKED BY: A.H. SMALLLEY NOV. 1960

Recommended For Approval  
 Recommended For Approval  
 Approved By: [Signature] 11/1/62  
 Bridge Engineer Date  
 Asst. Chief Engineer Date  
 Chief

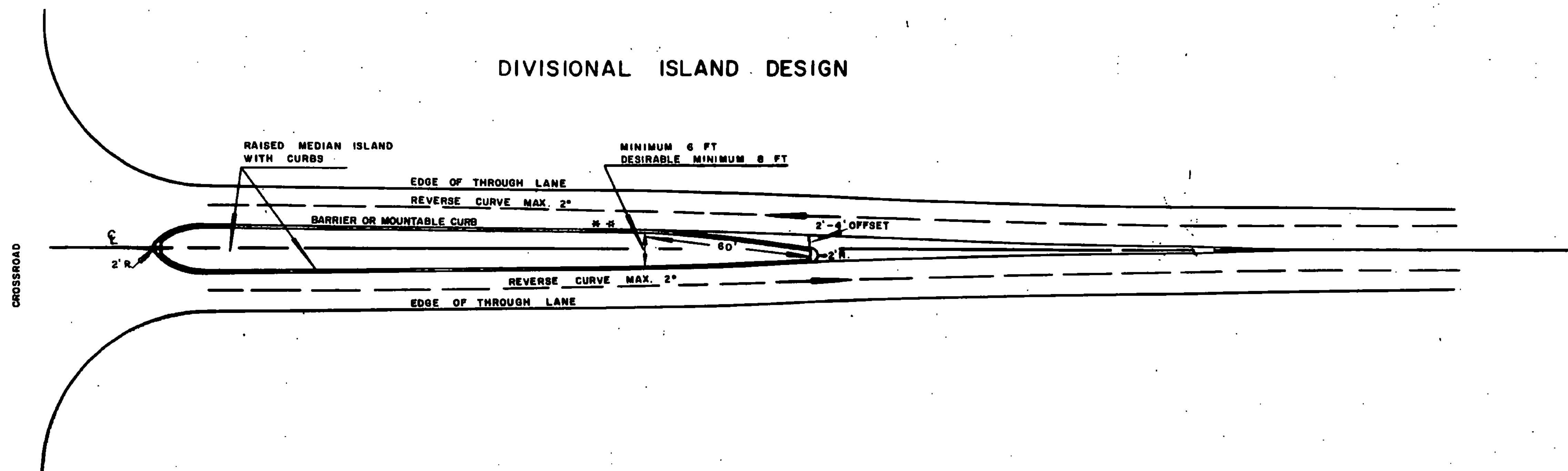
DETAILS OF APPROACH SLAB NO. 2  
 FOR 30 FOOT BRIDGE  
 (WIDTH)  
 TO BE USED FOR BRIDGE AT STATION 10+09.35  
 LOCATION BRANCH BROOK

STATE OF VERMONT  
 DEPARTMENT OF HIGHWAYS  
 STANDARD STRUCTURE  
 SB-AS-62  
 SHEET 21 OF 40

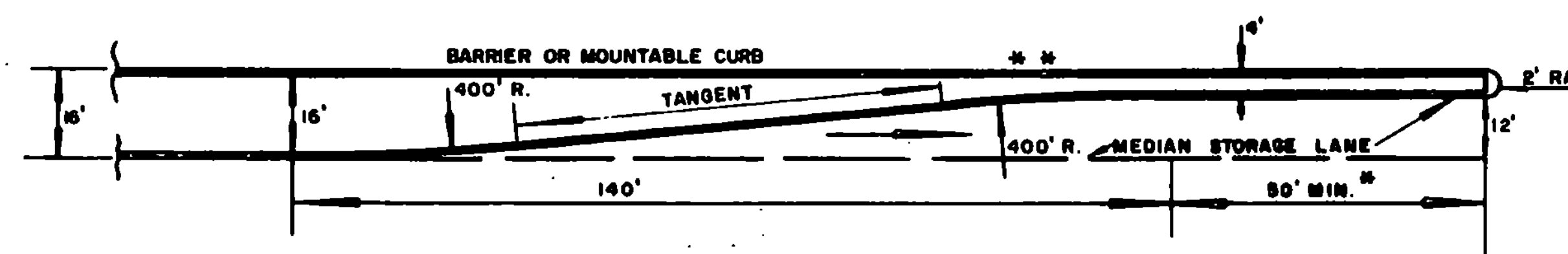
TOWN OF MT. HOLLY  
 ROUTE NO. 10  
 BRANCH BROOK  
 LOG STA. 5545

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

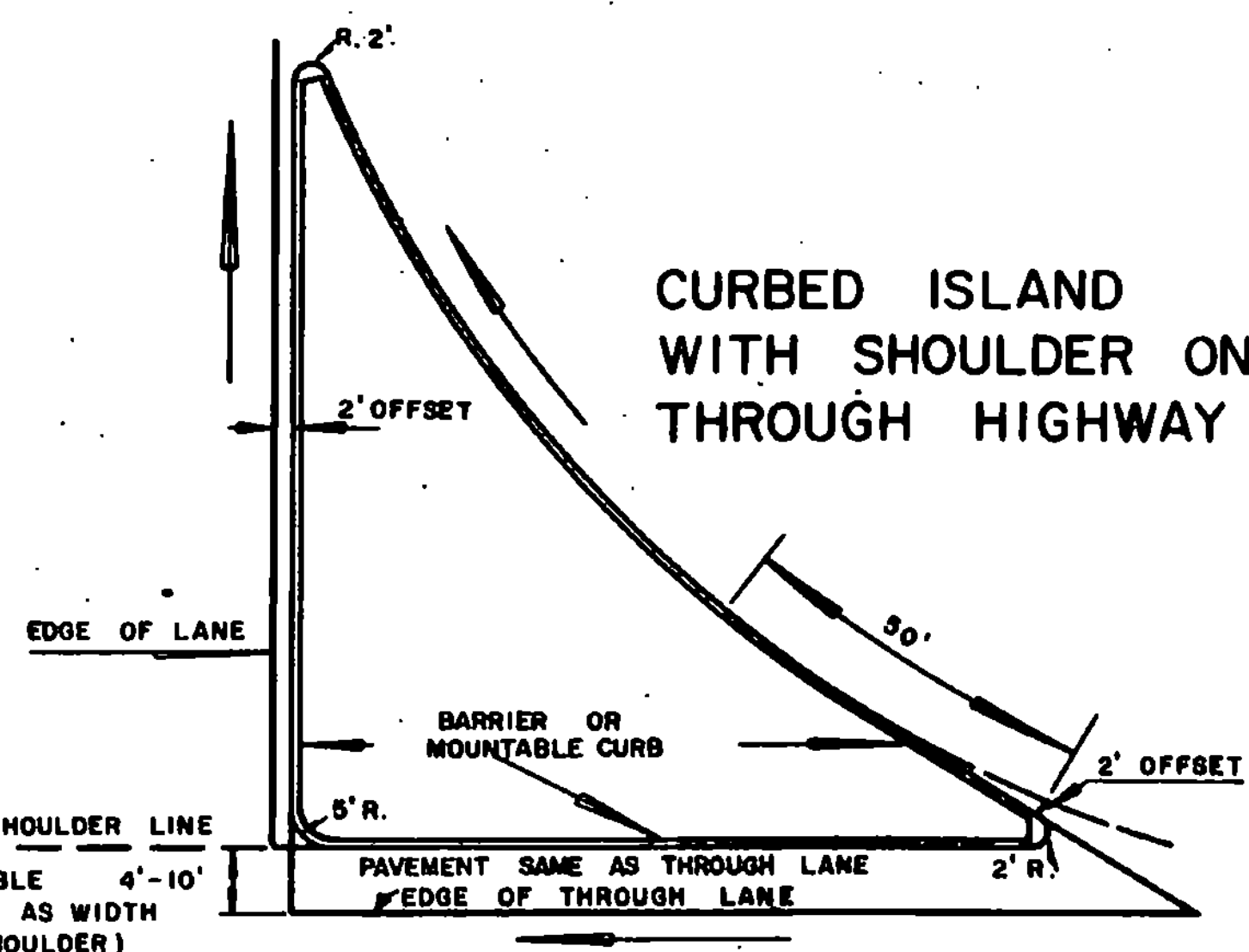
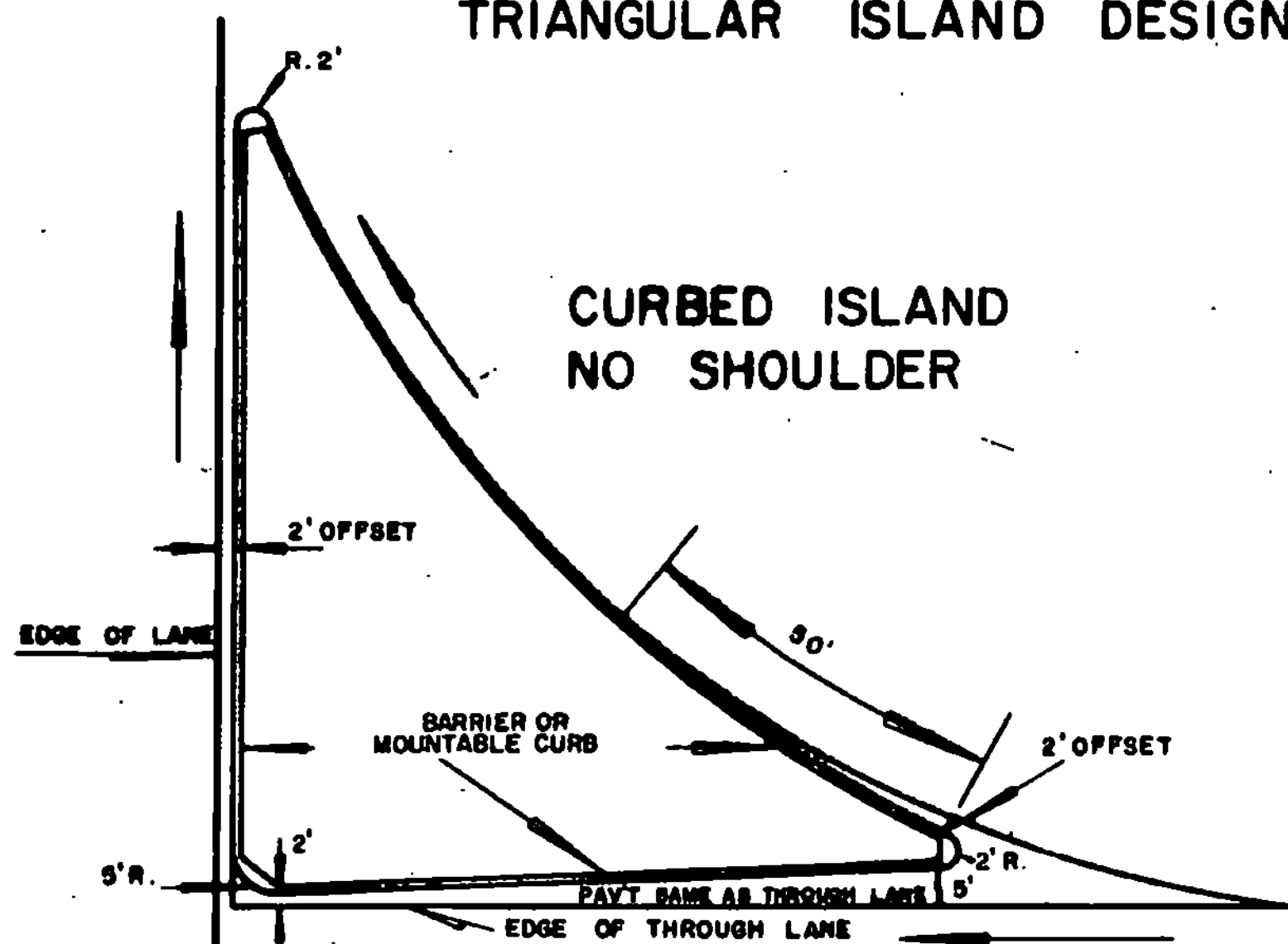
### DIVISIONAL ISLAND DESIGN



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



### TRIANGULAR ISLAND DESIGN

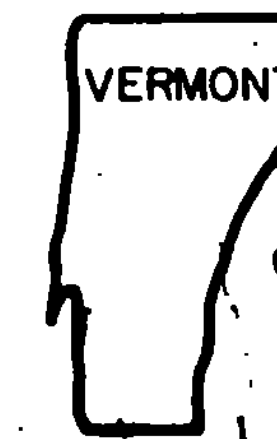


1. \* REFER TO A.A.S.H.O. POLICY ON GEOMETRIC DESIGN OF RURAL HIGHWAYS PAGE 433
2. \* \* BARRIER CURB TO BE USED IN URBAN AREAS WHERE PEDESTRIAN MOVEMENT ACROSS MEDIAN IS HEAVY. OTHERWISE MOUNTABLE CURB TO BE USED.
3. WHERE THROUGH TRAFFIC VOLUMES AND SPEEDS ARE HIGH, THE MEDIAN LANE AND TAPER SHALL 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.H. Stokney*  
 ASST. CHIEF ENGINEER  
*G.M. Lane*  
 HIGHWAY ENGINEER

## DIVISIONAL ISLAND, STORAGE LANES, AND TRIANGULAR ISLAND DESIGNS

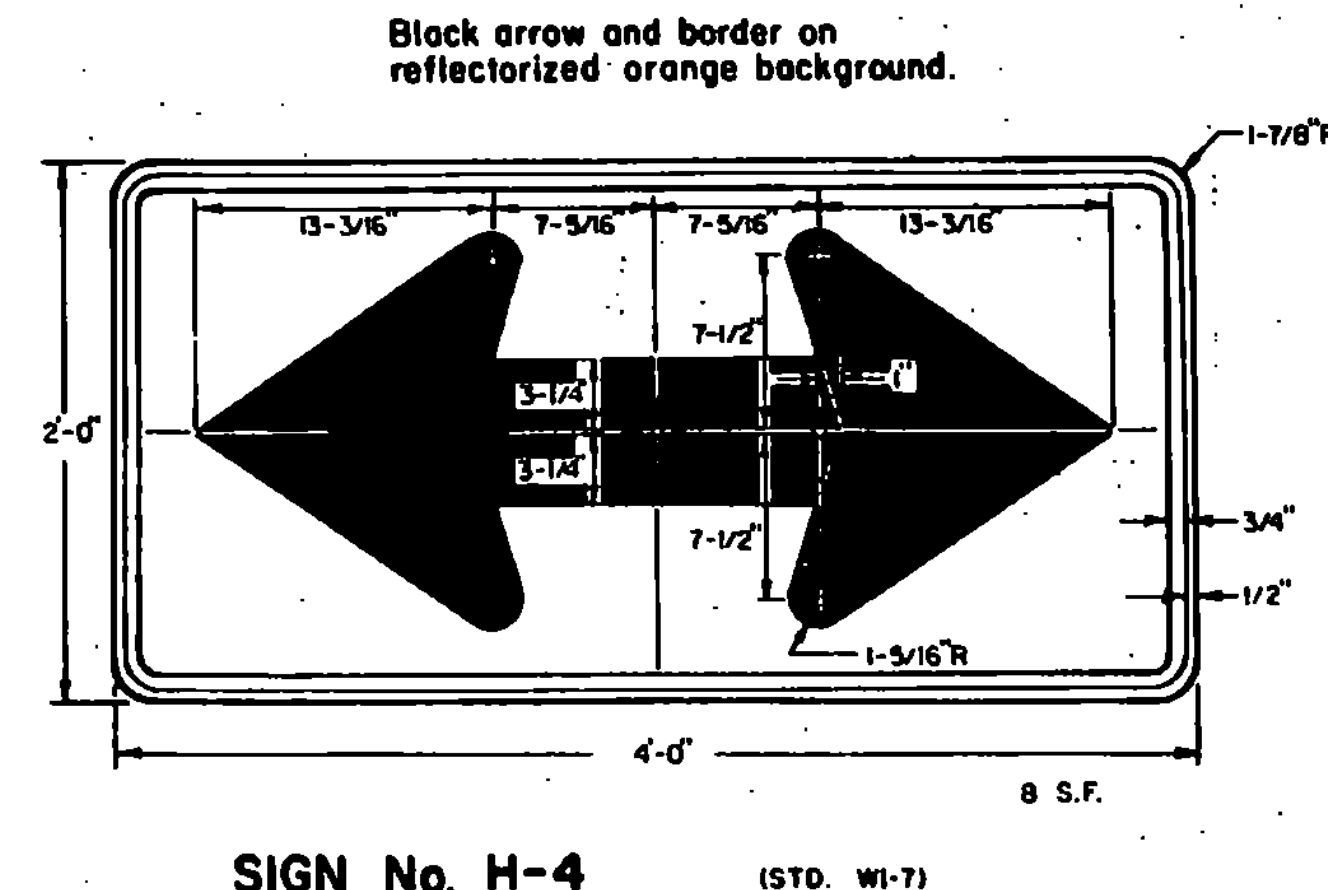
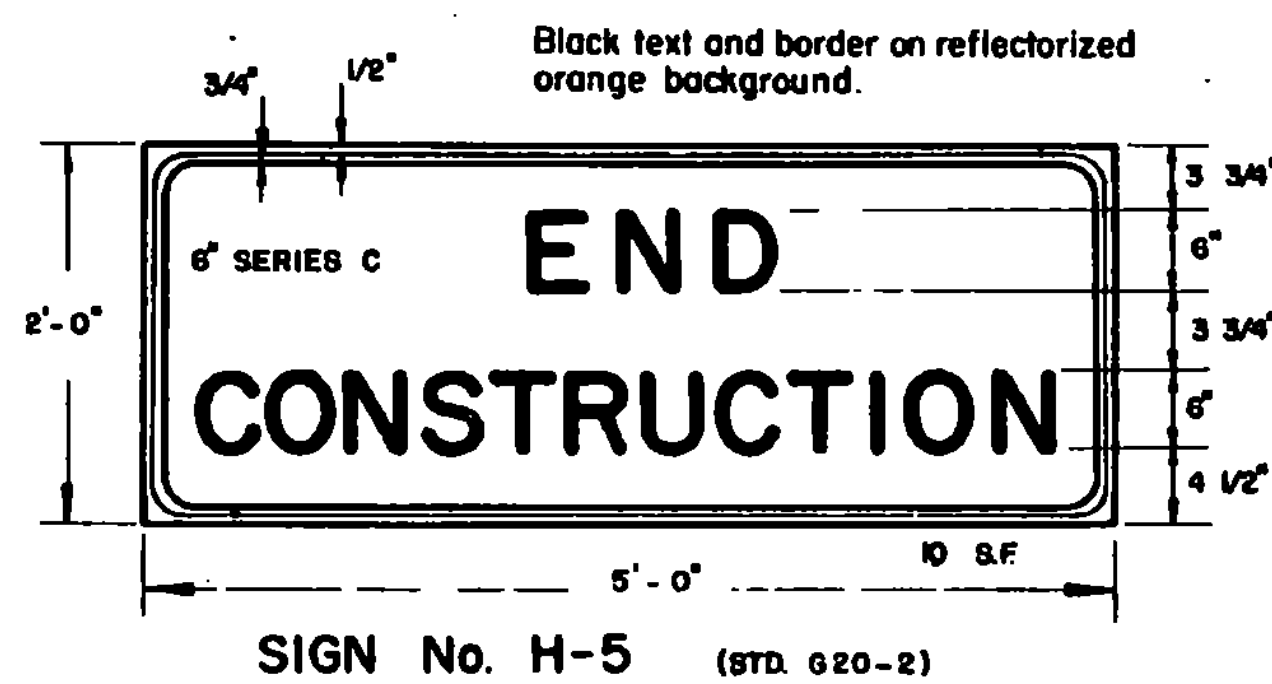
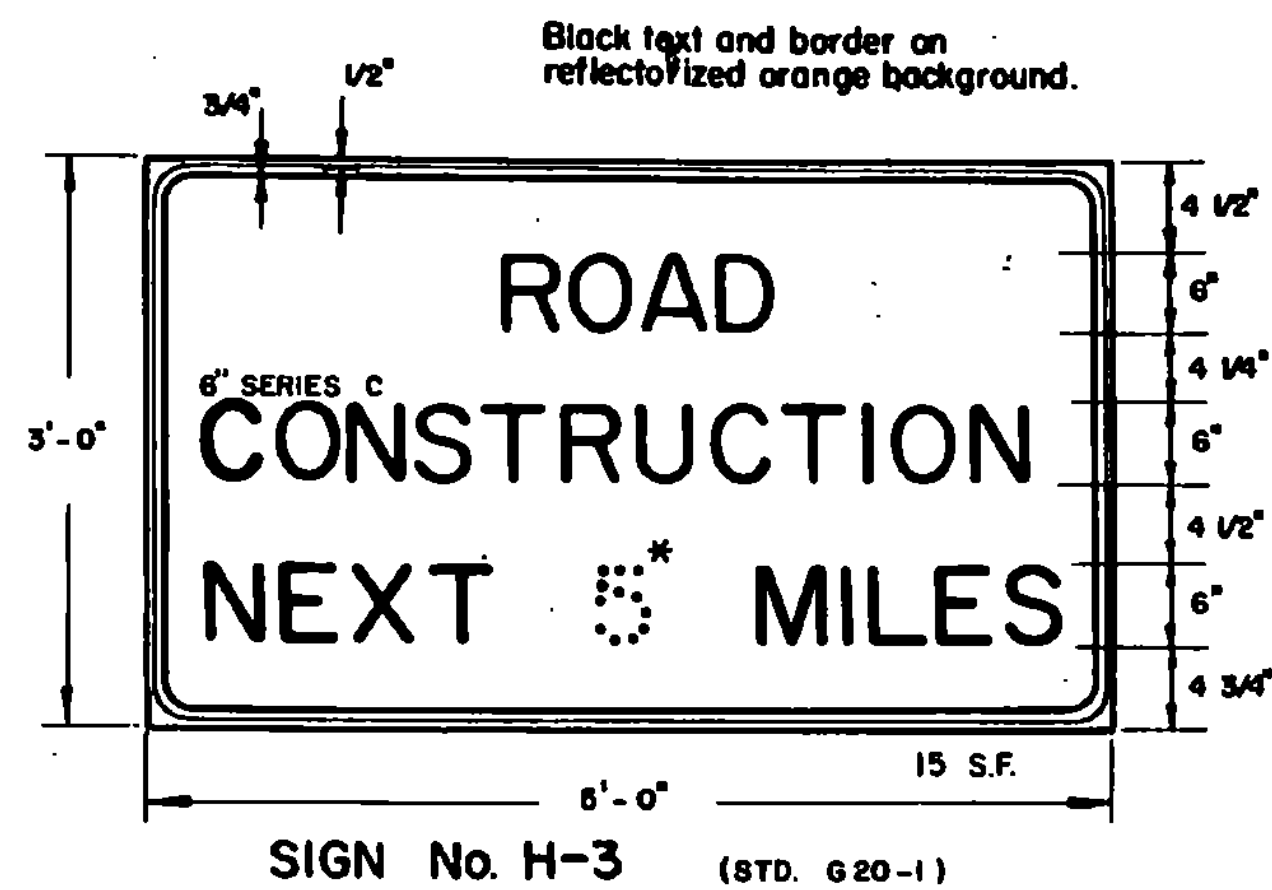
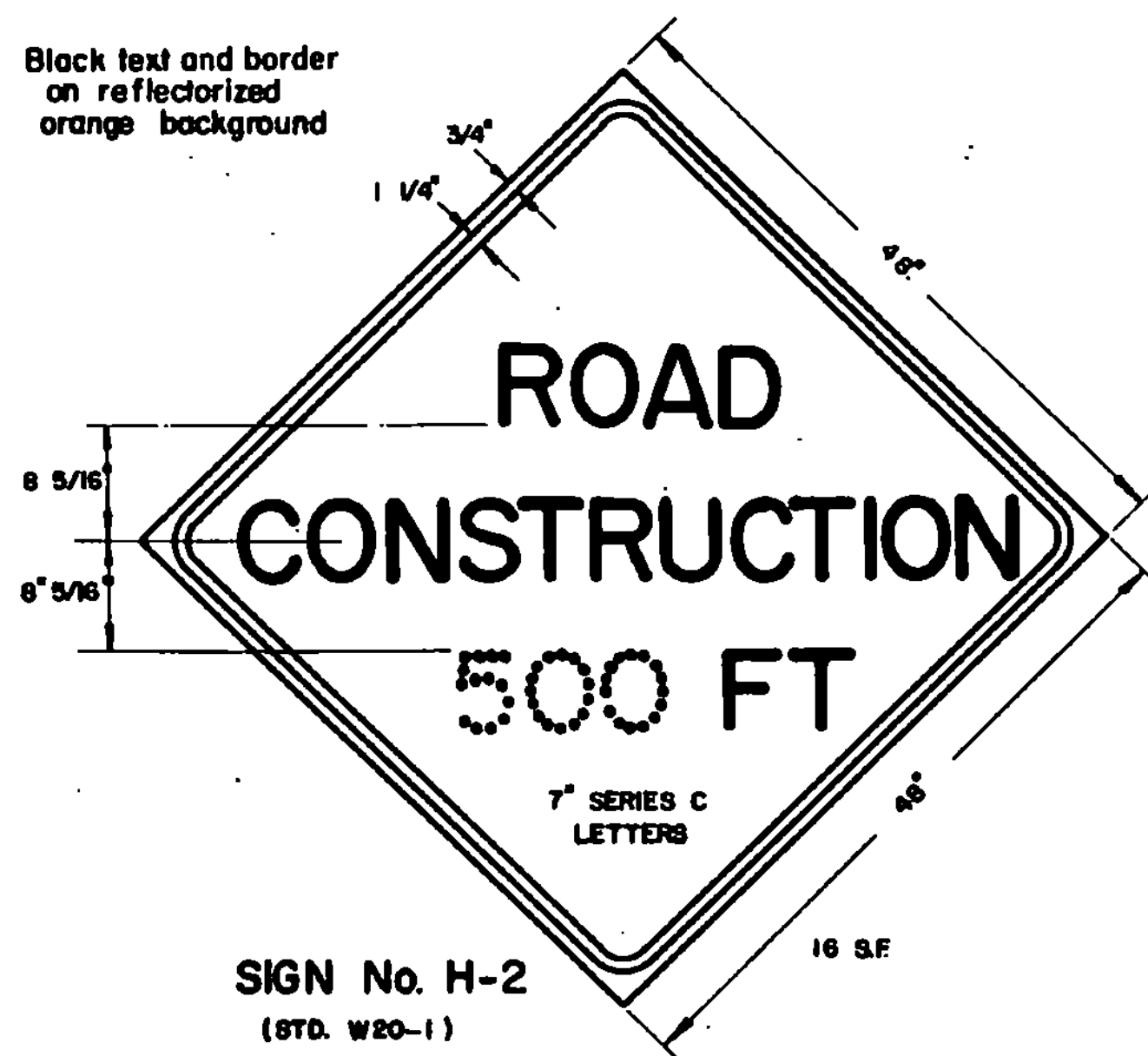
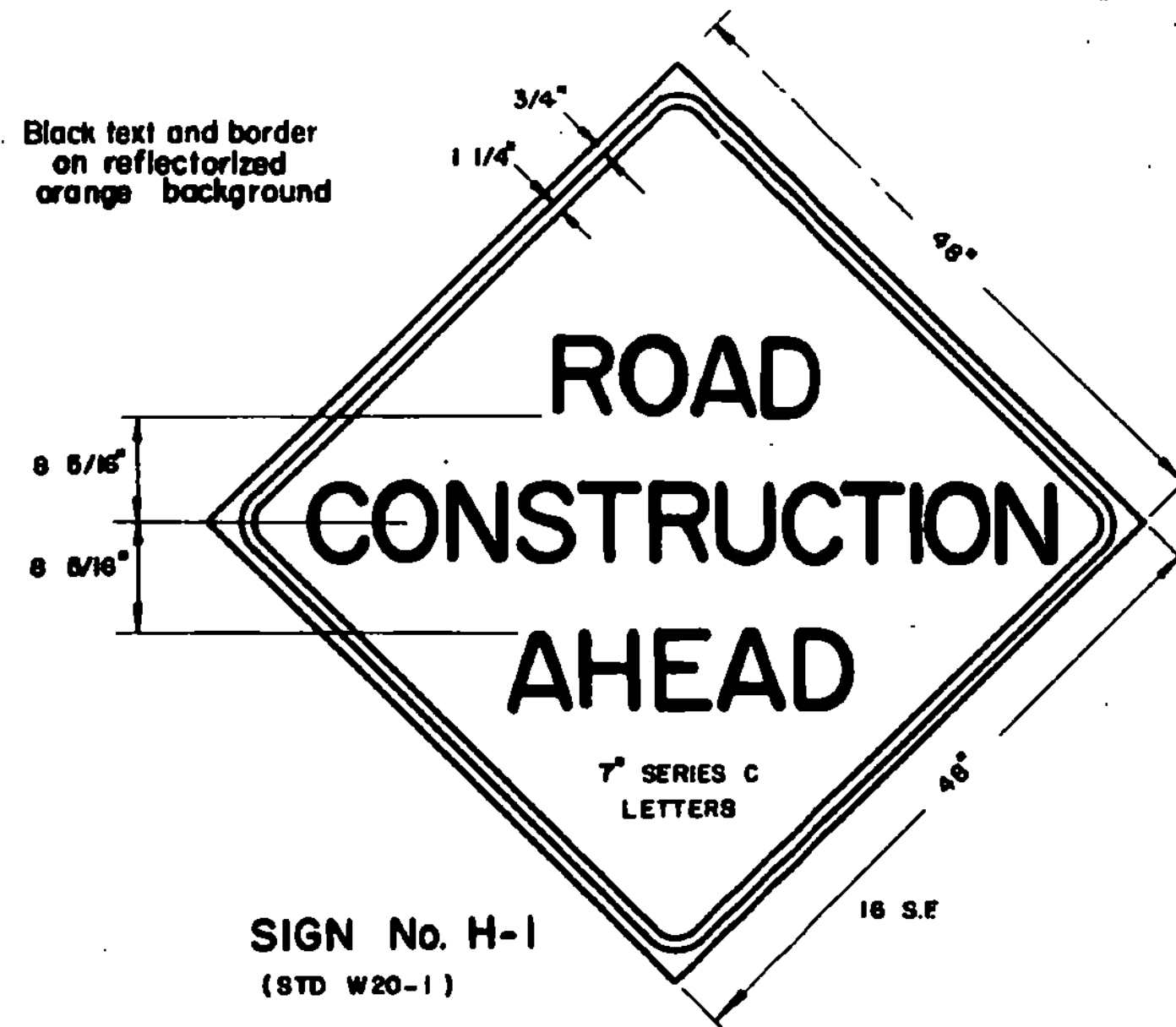


VERMONT  
DEPARTMENT  
OF HIGHWAYS  
STANDARD

# 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.

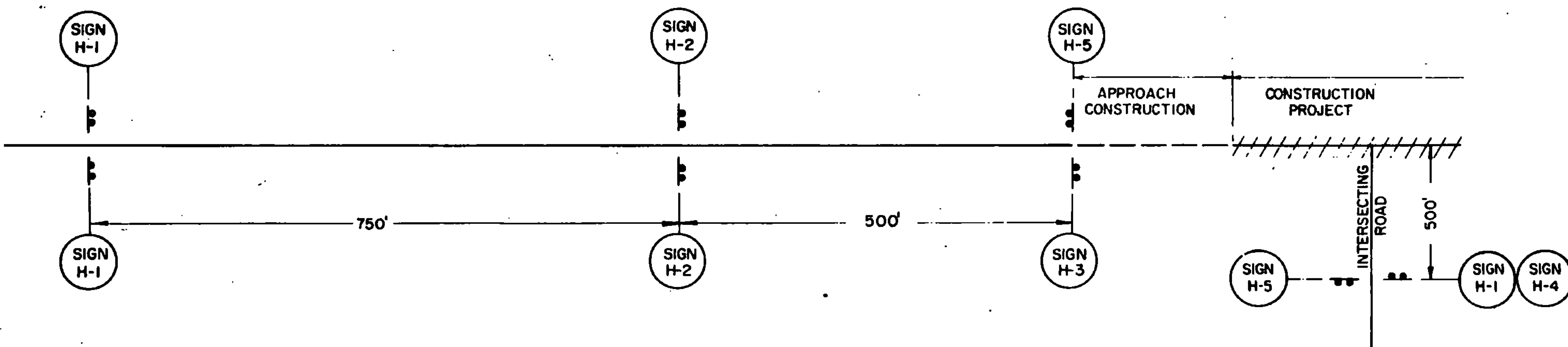
MAINTENANCE

Signs shall be maintained in a clean and legible condition satisfactory to the Engineer. They shall be completely visible to approaching traffic at all times. They shall be kept plumb and level, and always present a neat appearance. Damaged, defaced or dirty signs shall be repaired, cleaned or replaced as ordered by the Engineer.

GENERAL

The cost of furnishing, 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

Dec. 14, 1971

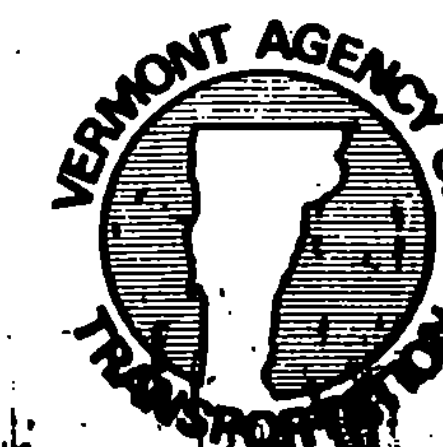
R. H. Arnold  
CHIEF ENGINEER

E. H. Stickney  
ASST. CHIEF ENGINEER

G. M. Laro  
HIGHWAY ENGINEER

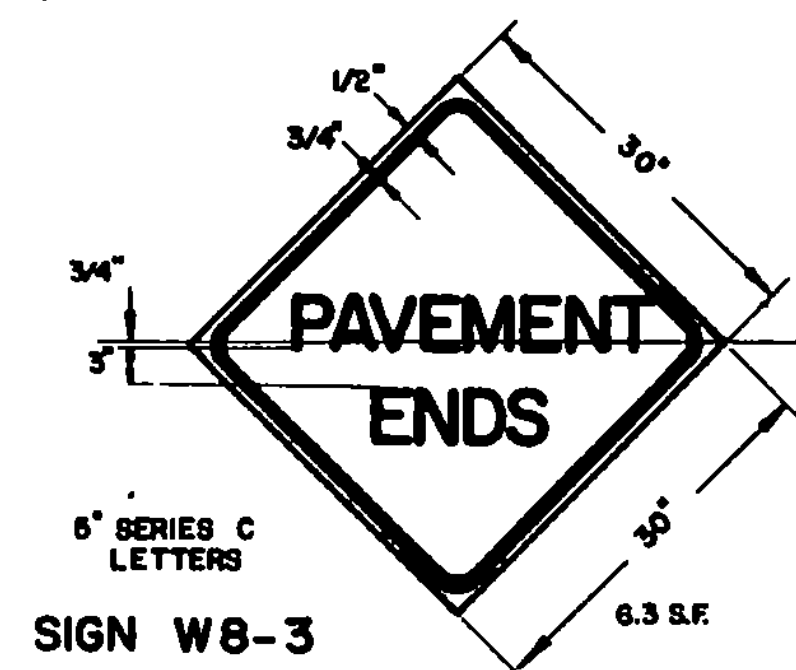
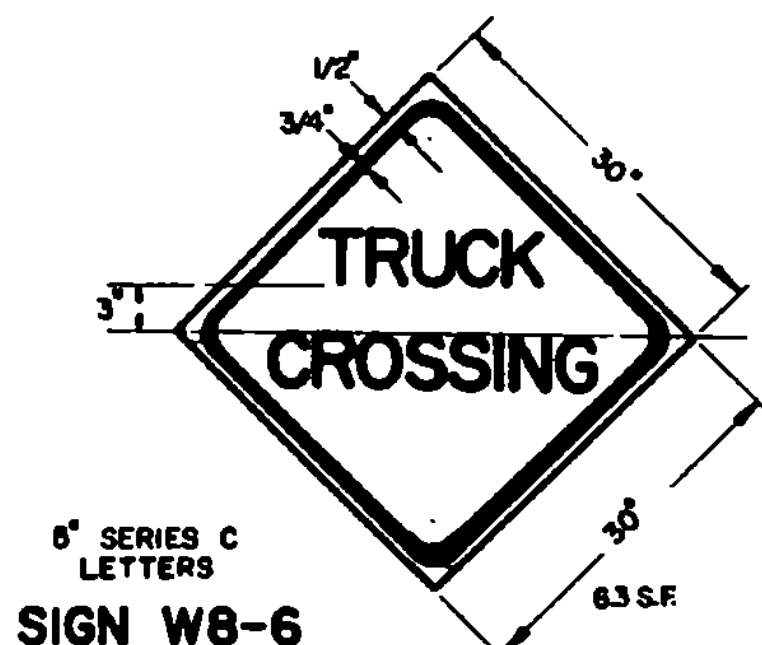
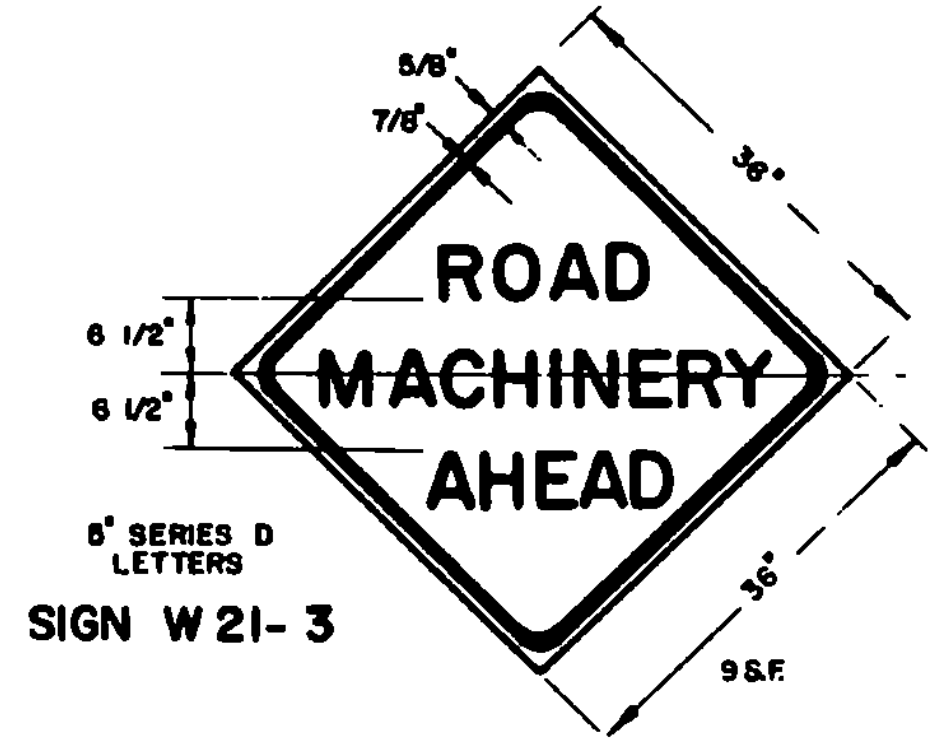
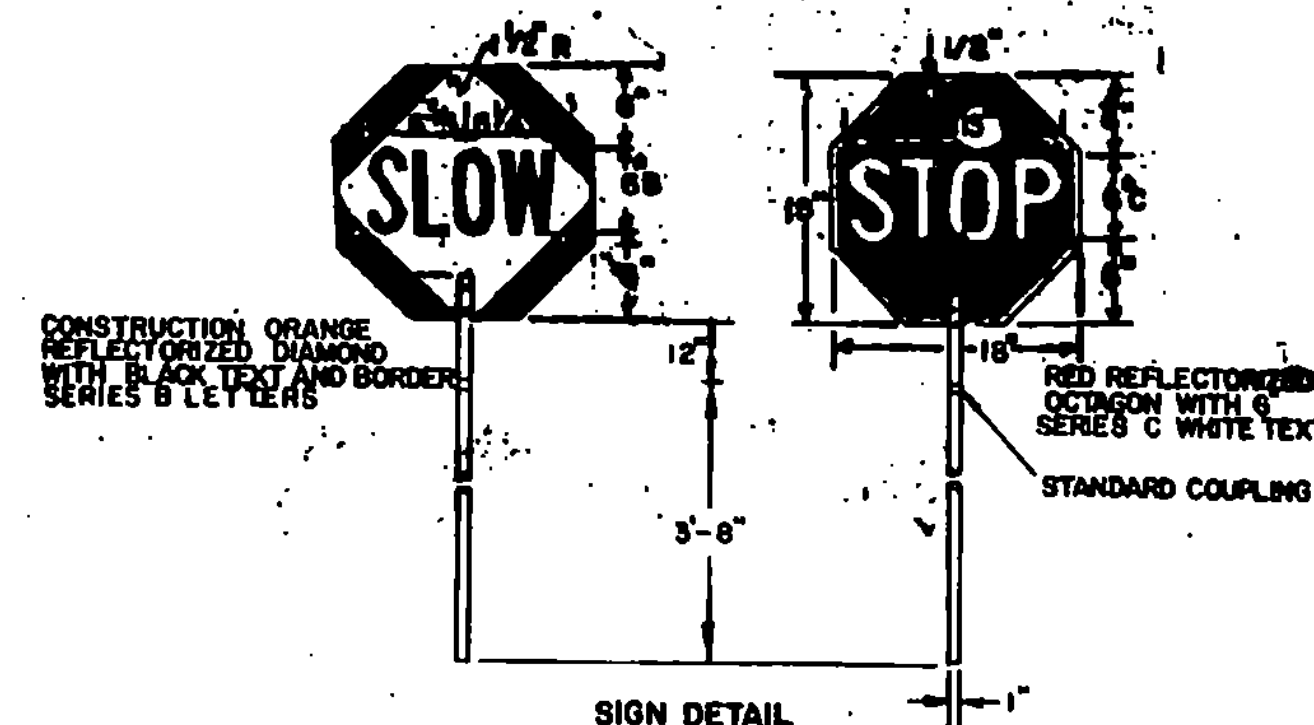
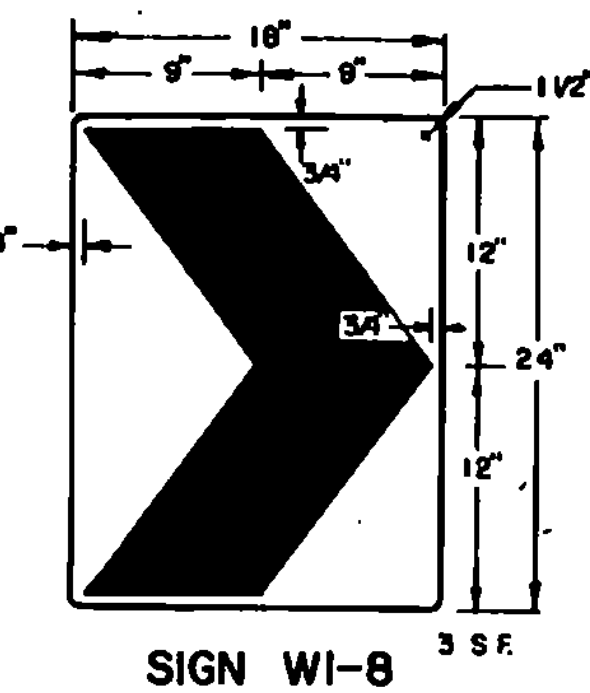
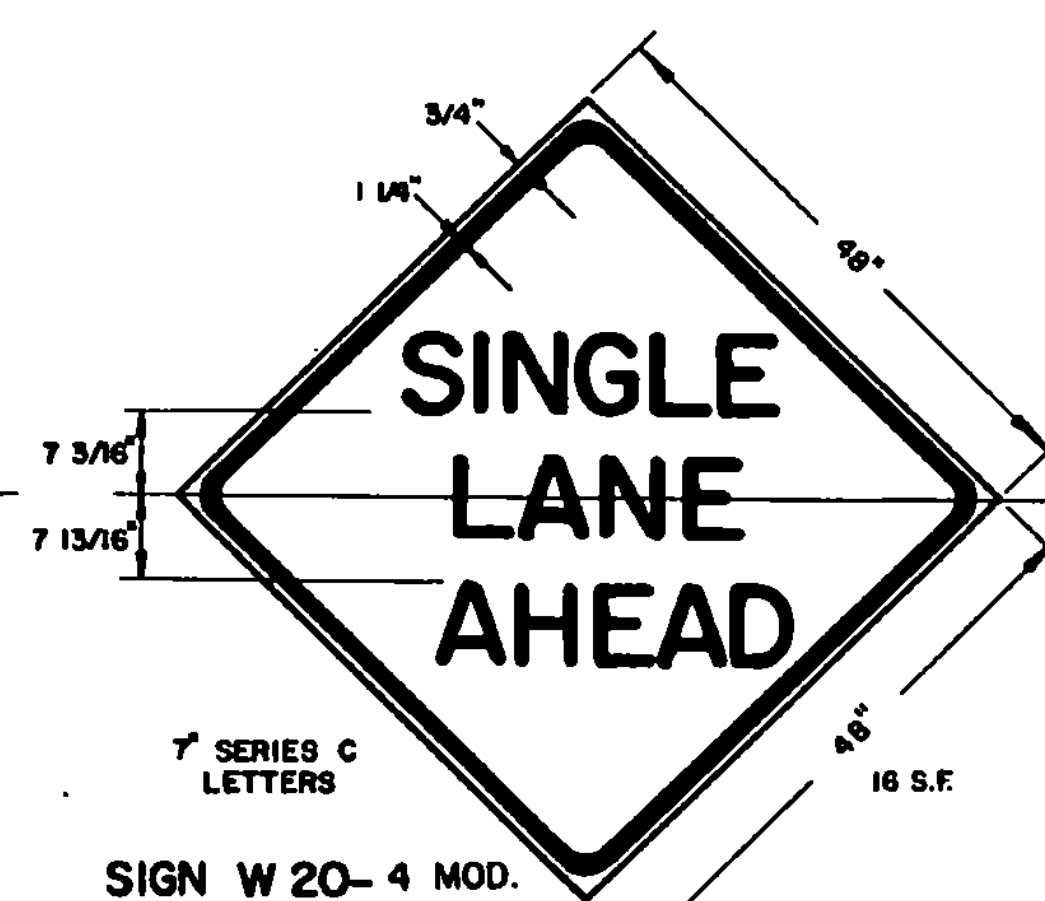
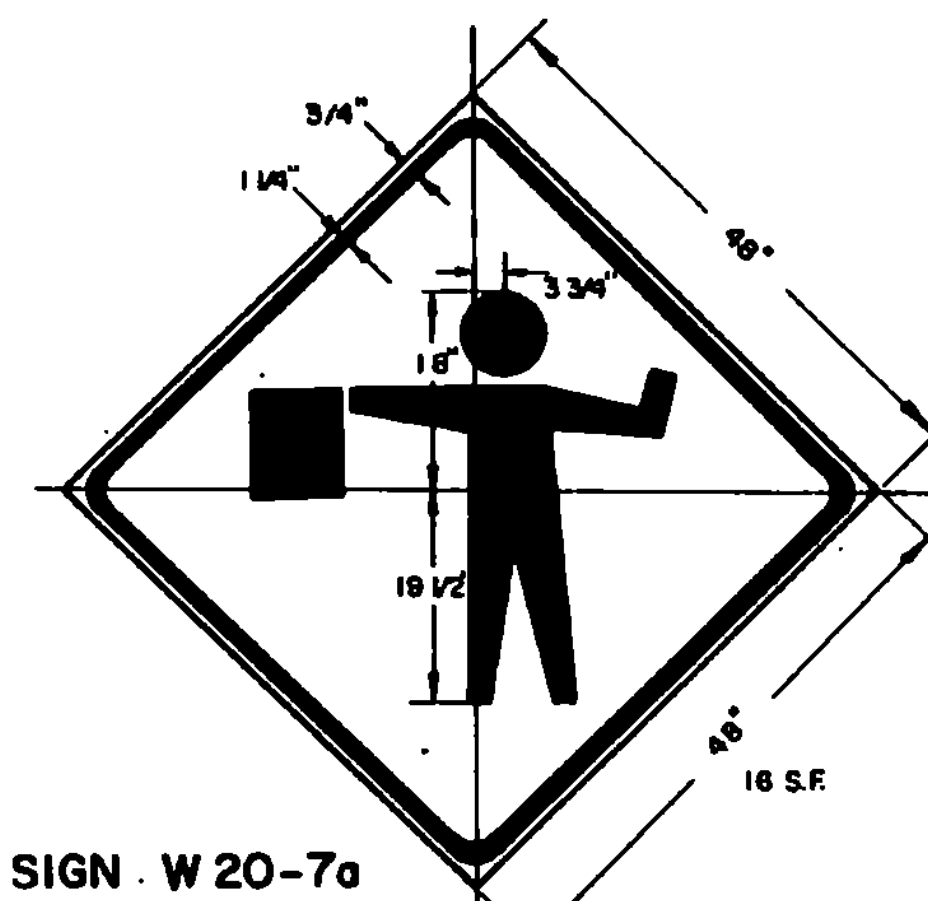
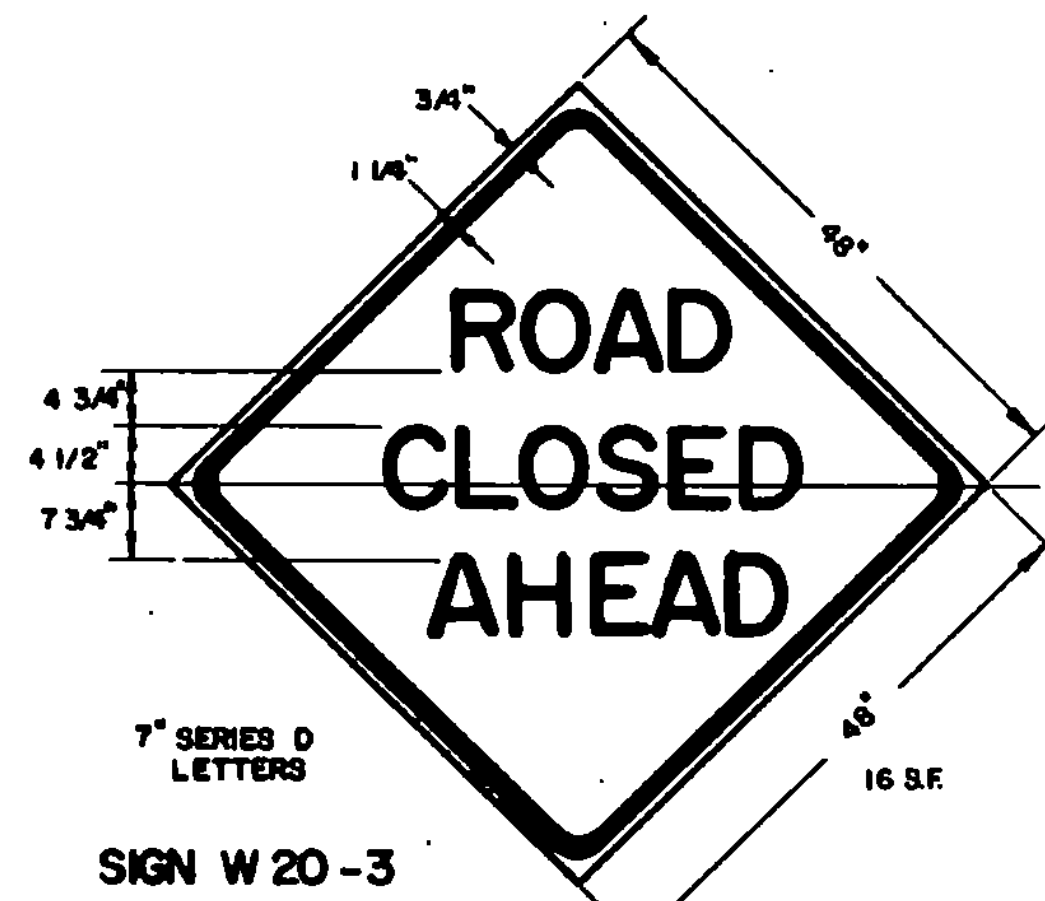
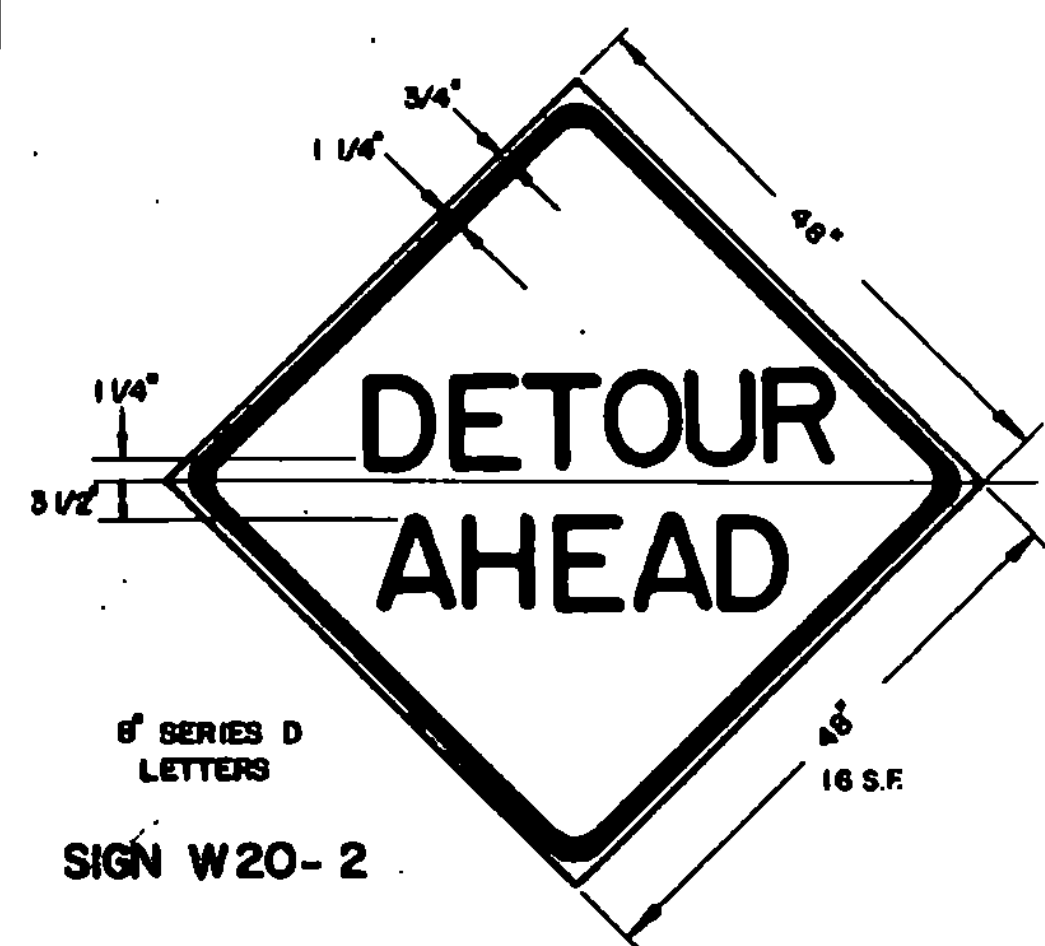
TRAFFIC SIGNS

ROAD CONSTRUCTION  
APPROACH SIGNS



STANDARD

E-2



**MATERIALS**  
The sign materials shall be 0.063 aluminum with colors as indicated on details.  
The staff shall be 1" ridged aluminum conduit or tubing with a wall thickness of 1/8 inch.

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

**MOUNTING**  
The staff shall be mounted with either 2-1/4" aluminum bolts or 2-1/4" aluminum rivets.

**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.

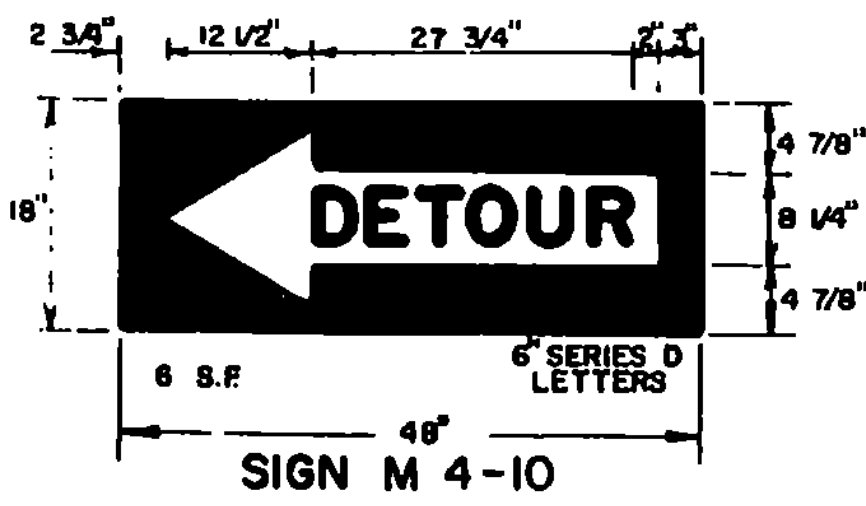
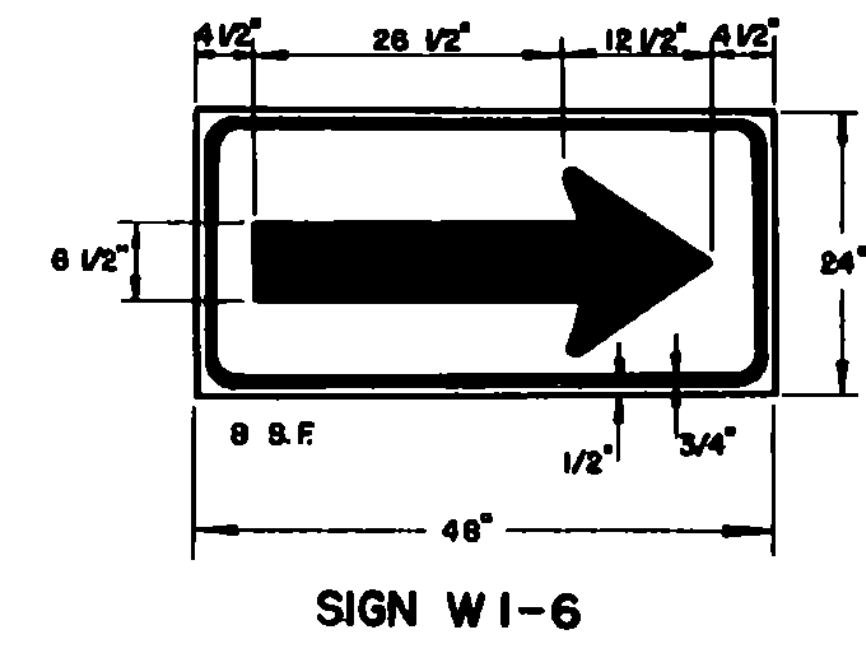
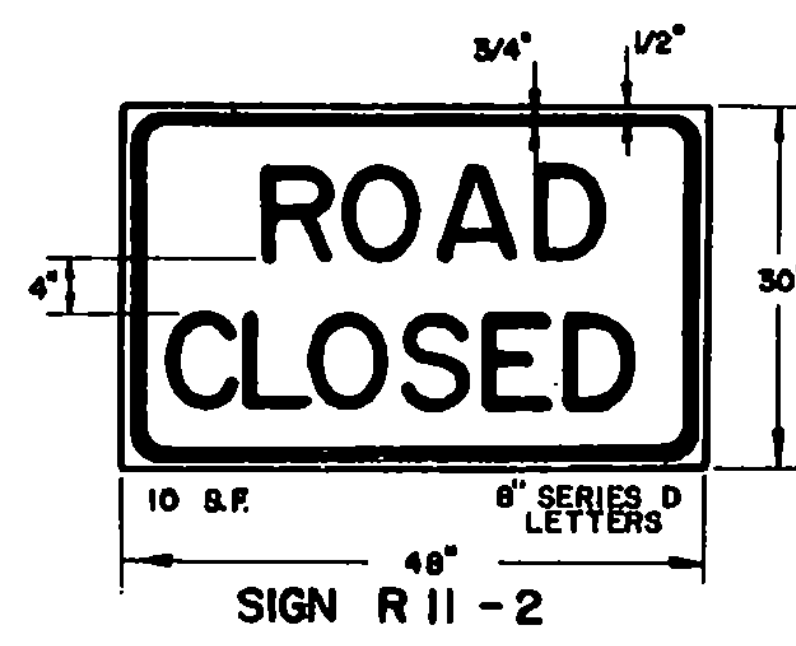
**DESIGN**  
The designs of the signs and barricades shall conform with the details shown on this sheet and with the standards prescribed in the Manual. Deviations will not be permitted.

**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 text 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.

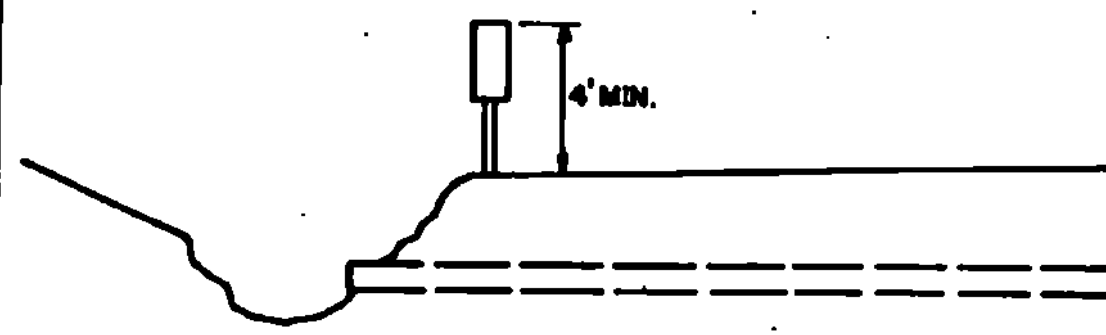
**REVISIONS AND CORRECTIONS**  
DEC. 14, 1973 - BEADS ON PAINT FOR BACKGROUND MATERIAL REMOVED.  
MAY 14, 1974 - REFLECTIVE MATERIAL CHANGE.  
JUNE 7, 1977 - REFLECTIVE MATERIAL NOTE CHANGED.  
JUNE 7, 1977 - SIGNS REFERENCED TO NUMBERS IN M.U.T.C.D.  
APR. 20, 1978 - FLAGPERSON SIGN CHANGED TO SYMBOL.  
DEC. 19, 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. Connold*  
CHIEF ENGINEER  
*E. J. Stickney*  
ASST. CHIEF ENGINEER  
*G. M. Lane*  
HIGHWAY ENGINEER

TRAFFIC SIGNS  
ON-PROJECT CONSTRUCTION SIGNS

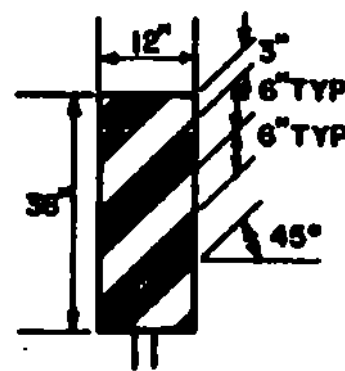
VERMONT AGENCY OF TRANSPORTATION  
STANDARD  
E-6

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



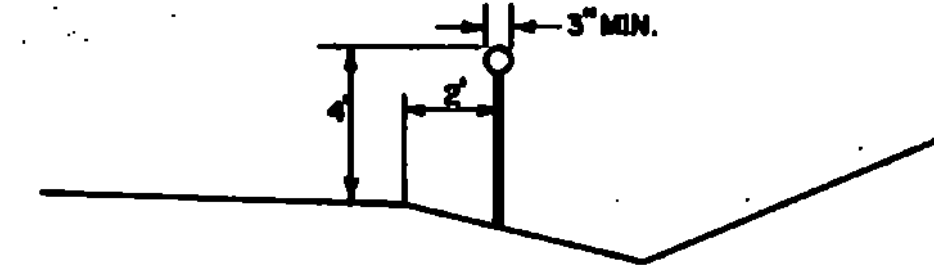
**HAZARD MARKER TYPICAL**

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.

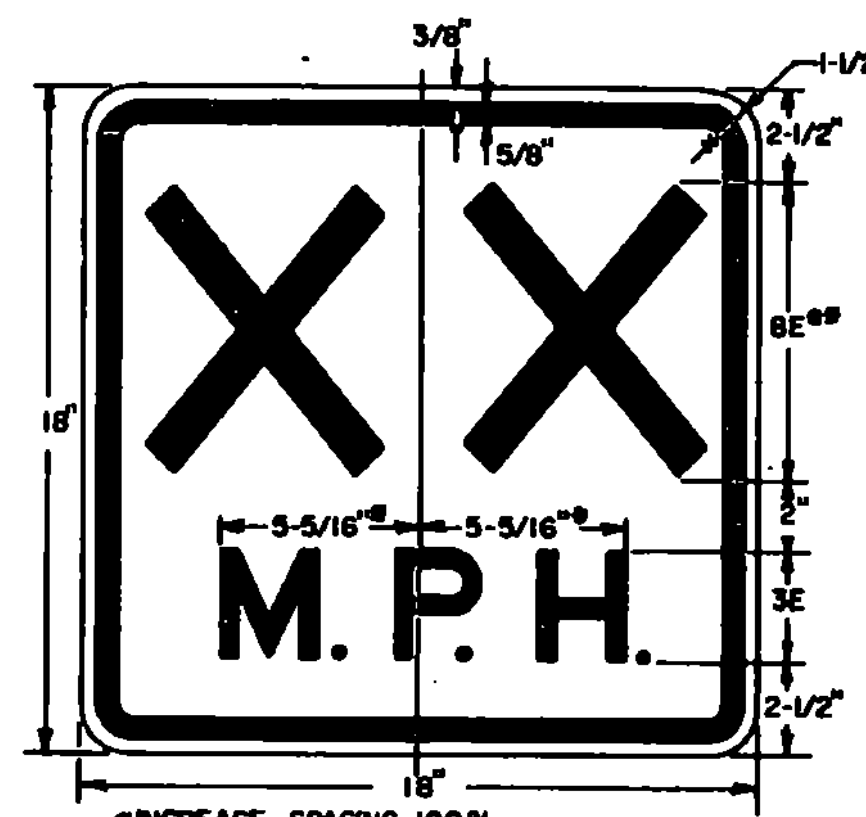


**SYMBOL**

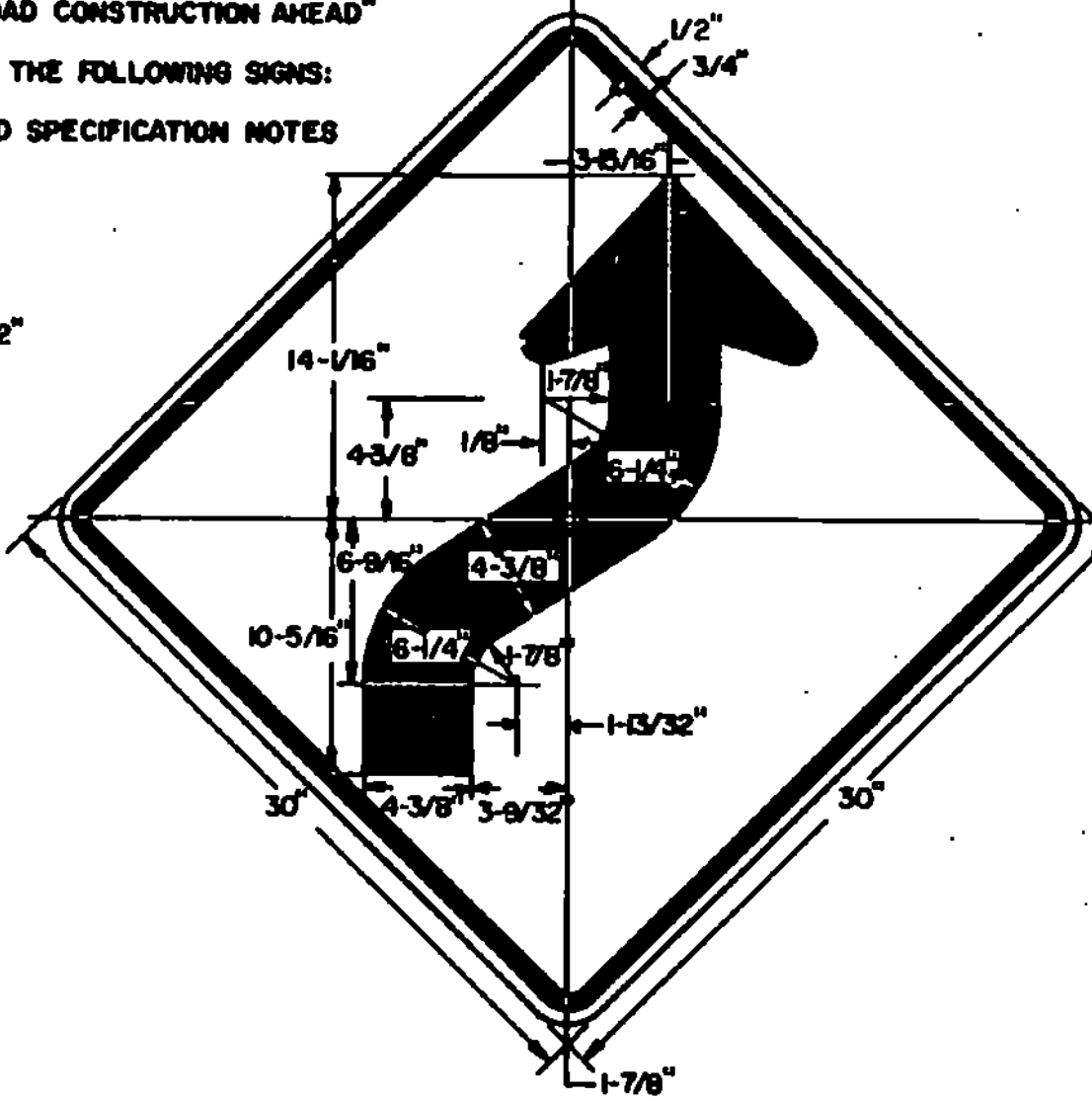
**DELINEATOR TYPICAL**

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.

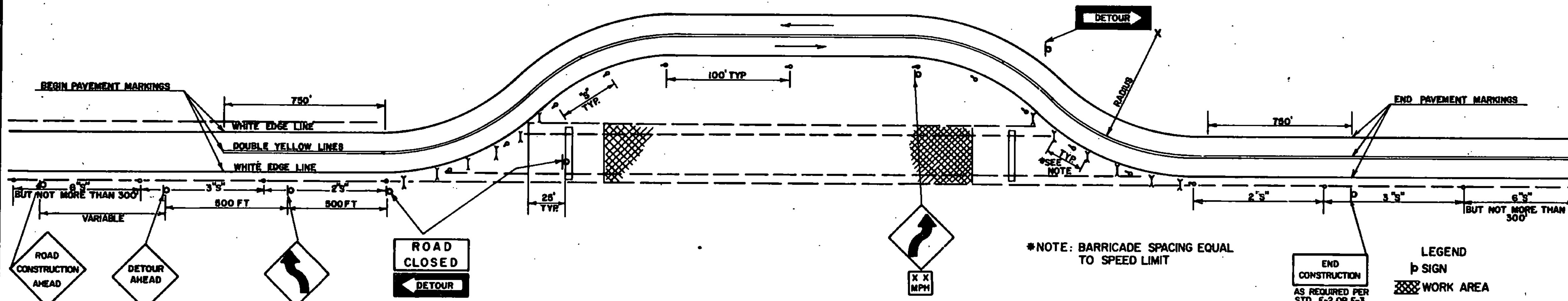


**NOTES**

- SIGNS & DELINEATION SHOWN FOR ONE DIRECTION OF TRAVEL ONLY.
- 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.
- FLASHING WARNING LIGHTS MAY BE USED TO CALL ATTENTION TO THE EARLY WARNING SIGNS.
- CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
- ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS ON EXISTING PAVEMENT.

**DELINEATOR SPACING**

DESIGN SPEED MPH	REQUIRED RADIUS FT	SPACING - "S"
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 ERRECTED 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.

- WOODEN BARRICADES (TYPES I AND II)
  - 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.
  - MAY BE USED IF OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
- 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**

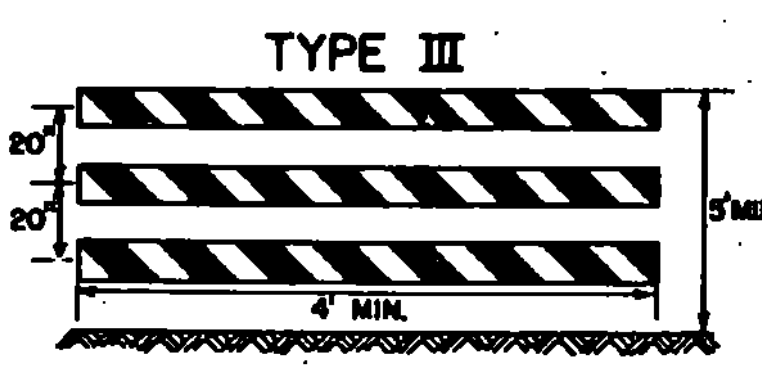
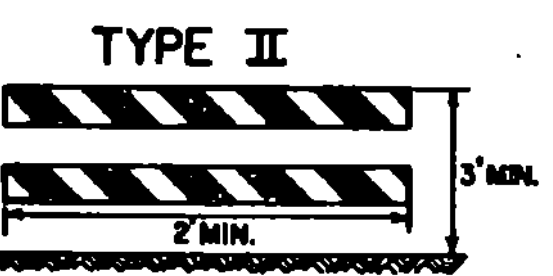
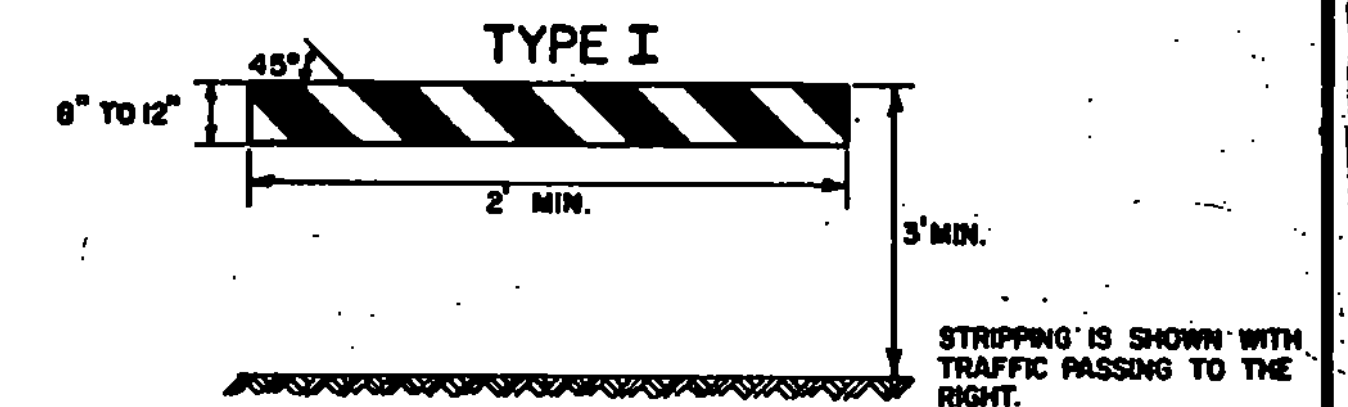
THE BARRICADES PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING REFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY 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.



BARRICADE CHARACTERISTICS	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 STRUT BRACE
FLEXIBILITY	ESSENTIALLY MOVEABLE	PORTABLE
ANGLE OF STRIPE	45°	45°
COLOR OF STRIPS	ORANGE AND WHITE	ORANGE AND WHITE

**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: \_\_\_\_\_  
 DATE: SEPT. 22, 1981

\_\_\_\_\_  
 DIRECTOR OF ENGINEERING AND CONSTRUCTION

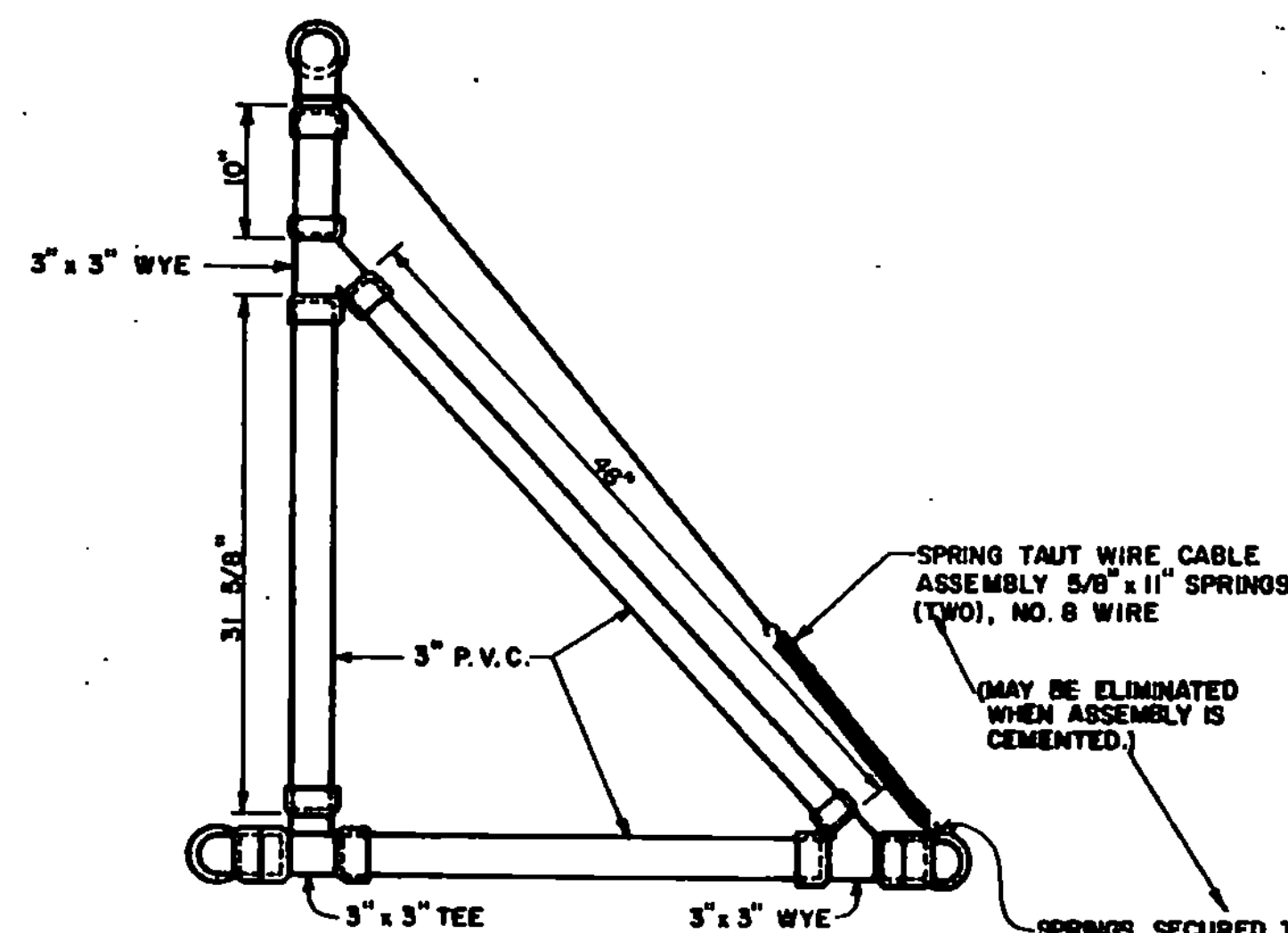
\_\_\_\_\_  
 CHIEF OF DESIGN

\_\_\_\_\_  
 TRANSPORTATION DESIGN ENGINEER

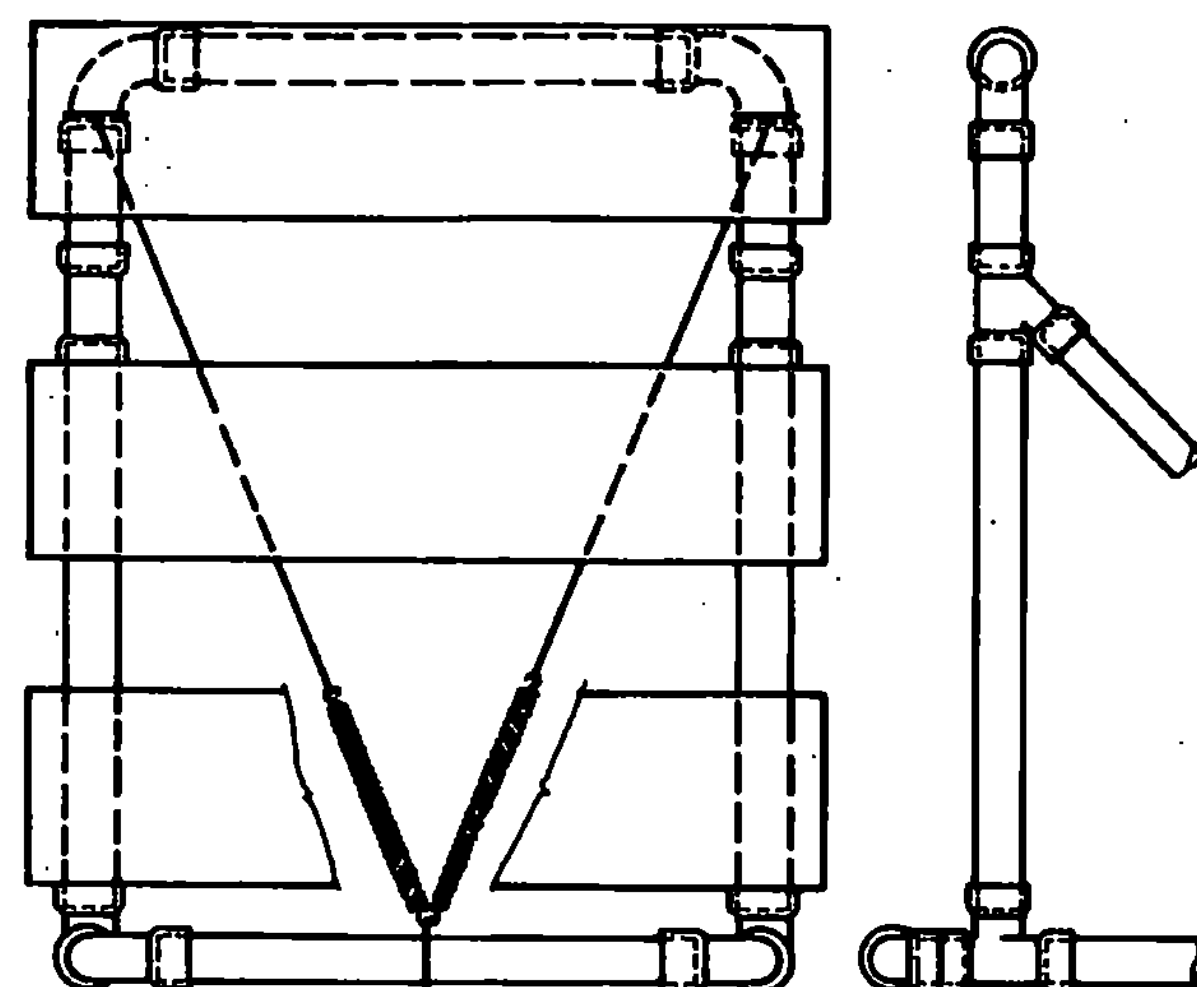
**DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS**



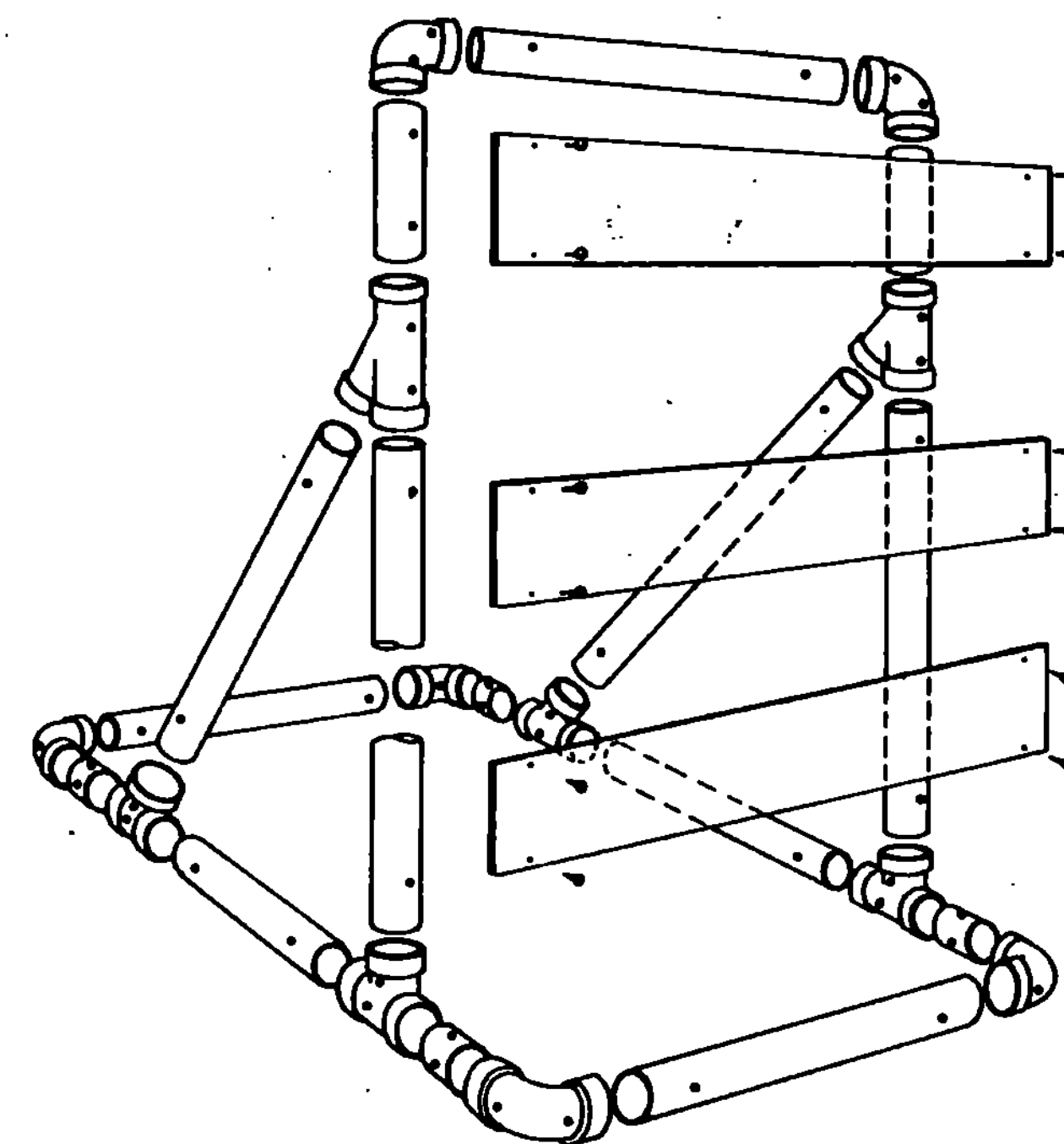
**STANDARD E-7**



SIDE VIEW



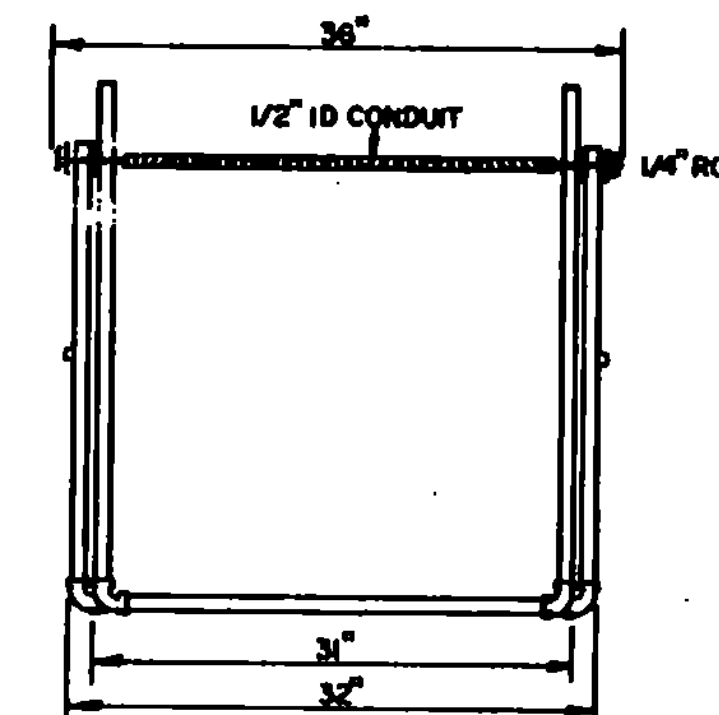
FRONT VIEW



BARRICADE ASSEMBLY

MATERIALS LIST FOR ONE BARRICADE

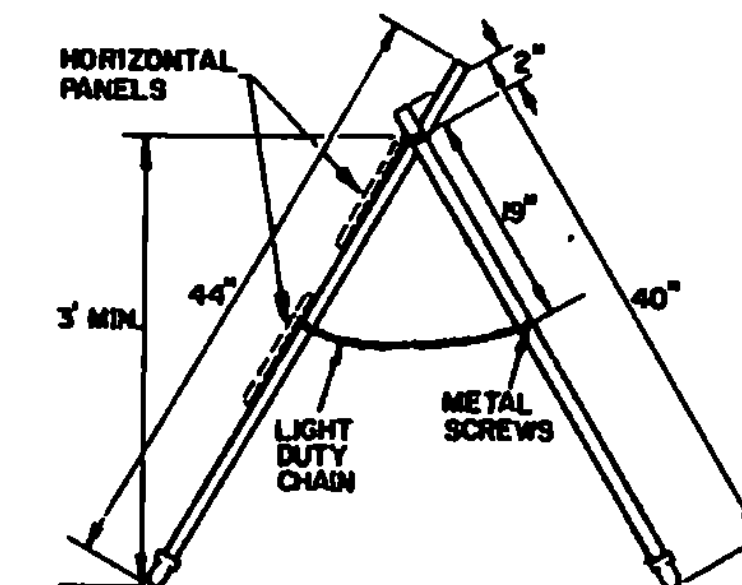
3" Diameter Pipe	30 LF
3" 1/4 Bend Elbow	6 EA
3" Tees	2 EA
3" Wyes	4 EA
8" x 48" x 0.25 Barricade Panels	2 EA
5/8" x 11" No. 8 Spring	2 EA
1" No. 14 Pan Head Metal Screws	12 EA
No. 14 Black Annealed Tie Wire	15 LF



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'-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.

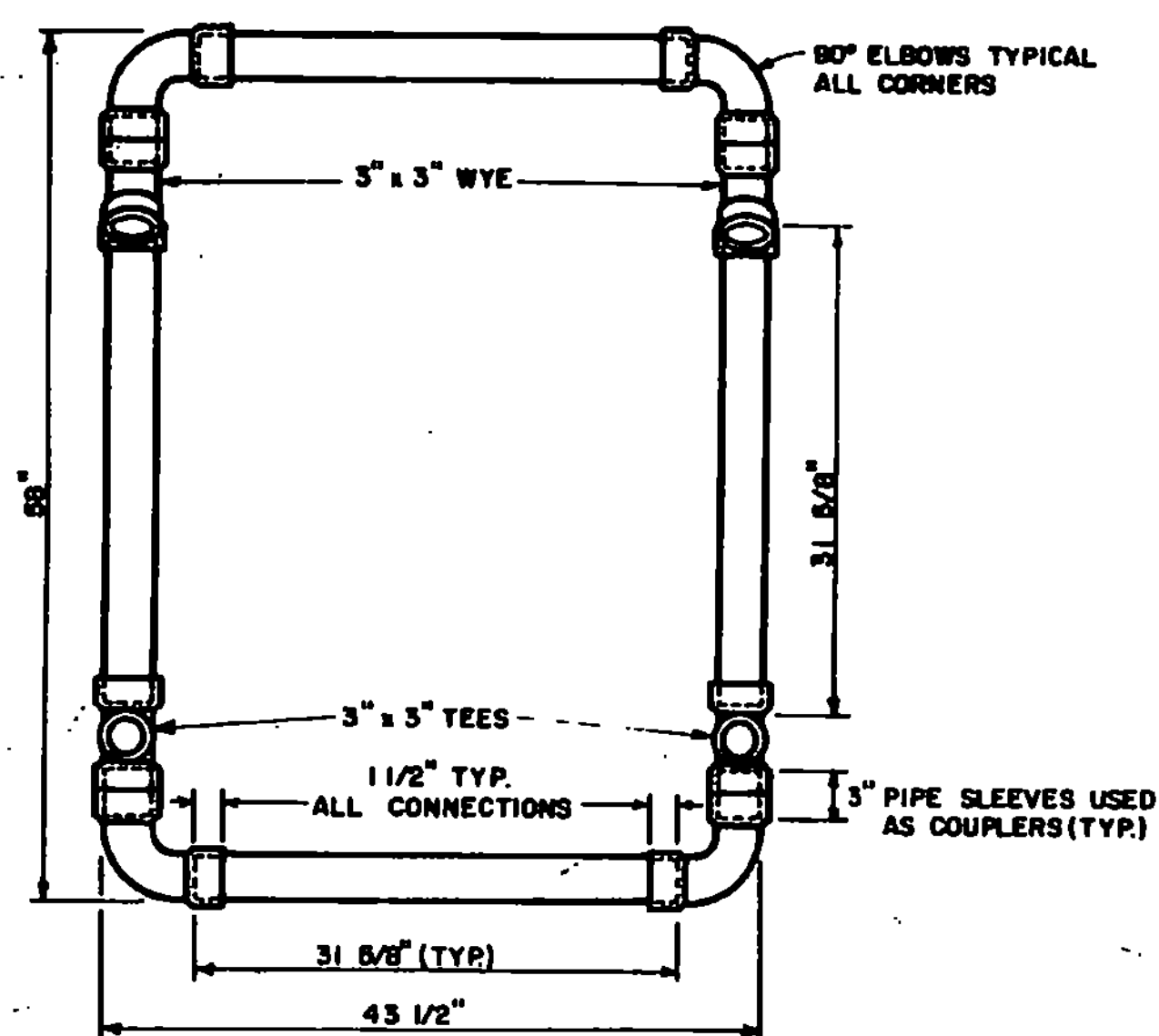


TYPE I & II BARRICADE DETAILS

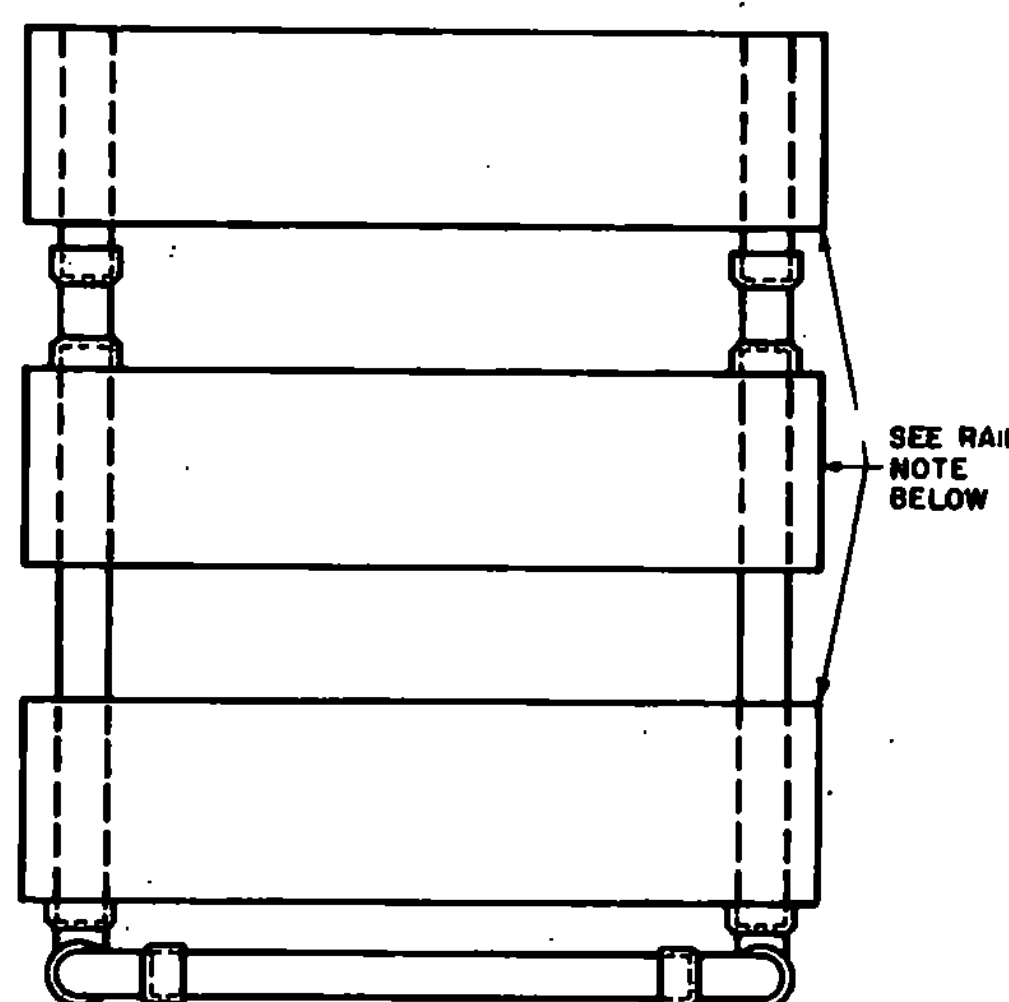
BARRICADES SHALL BE STABILIZED WITH SAND BAGS OF MINIMUM WEIGHT WHICH WILL NOT CONSTITUTE A HAZARD WHEN BARRICADE IS HIT. THEY SHALL BE PLACED ONLY ON THE BASE FRAME OF THE BARRICADE. STABILIZERS SHALL BE SO PLACED AS NOT TO BE A HAZARD TO VEHICLES PASSING ON EITHER SIDE.  
IF BARRICADE REPLACEMENT COSTS CAN BE CONSIDERED NEGLIGIBLE, GLUED JOINTS MAY PROVIDE ADDITIONAL STABILITY TO THE INSTALLATION.

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.O. 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.



TOP VIEW OF BASE



SEE STANDARD E-7 FOR RAIL DETAILS.  
RAILS ATTACHED WITH 1" NO. 14 PAN HEAD METAL SCREW.

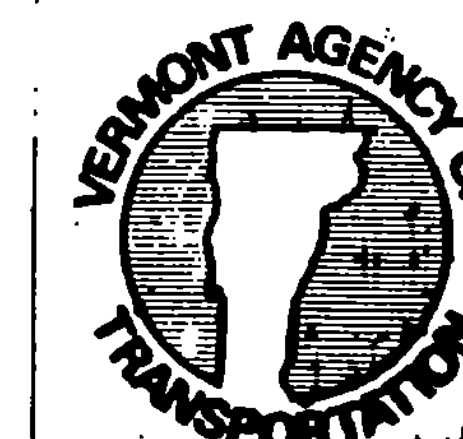
REVISIONS & CORRECTIONS  
JAN. 11, 1977 - REVISED ACCORDING TO FHWA REQUIREMENTS.  
JUNE 8, 1977 - MATERIALS LIST ADDED.  
APR. 8, 1982 - CEMENTING NOTE AND BARRICADES TYPE I & II ADDED.  
JUNE 13, 1984 - RAILS CHANGED FROM 9" TO 8".  
JAN. 3, 1985 - SAND AND WARNING LIGHT NOTE ADDED.  
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED

Dec 30, 1976  
DATE  
E. H. Stinchey  
CHIEF ENGINEER  
R. O. Munn  
ASST. CHIEF ENGINEER  
Dana C. Jones  
HIGHWAY ENGINEER

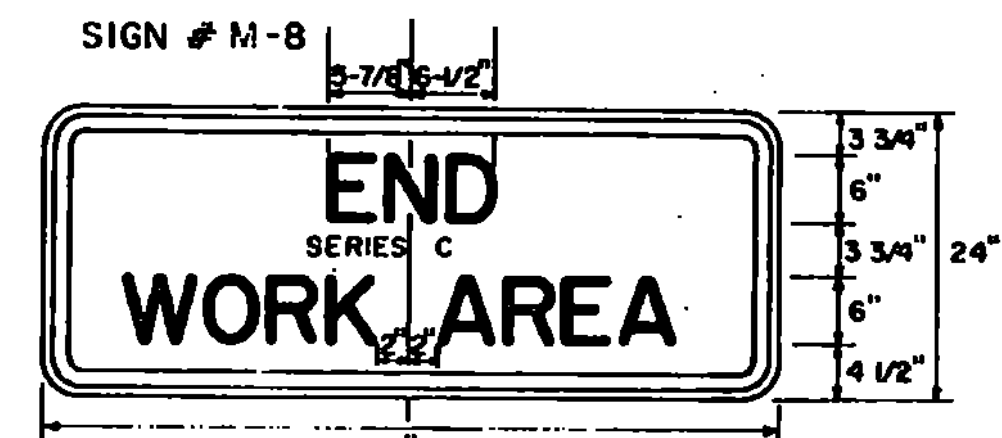
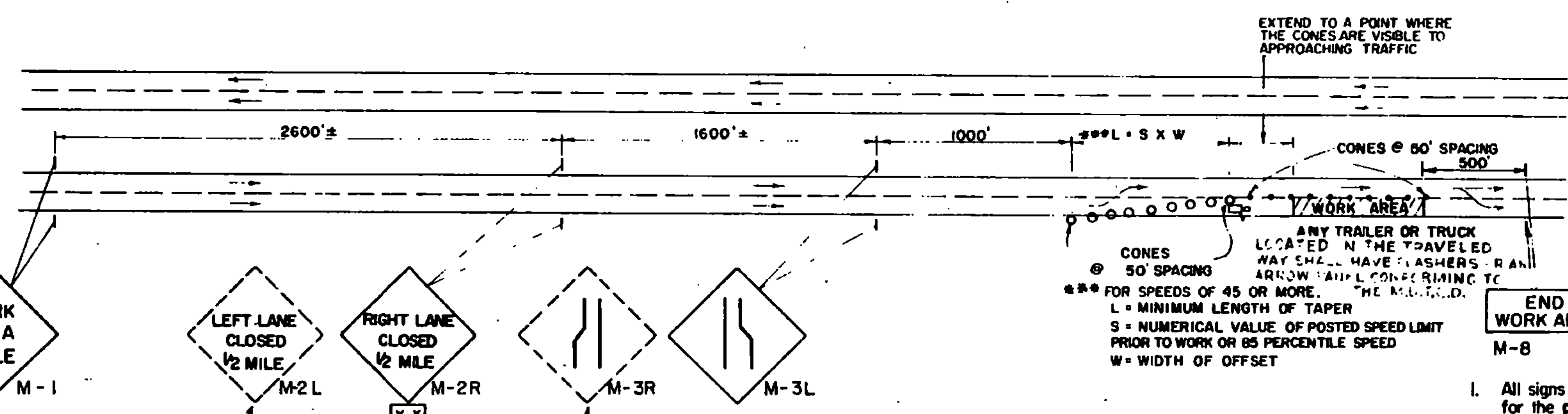
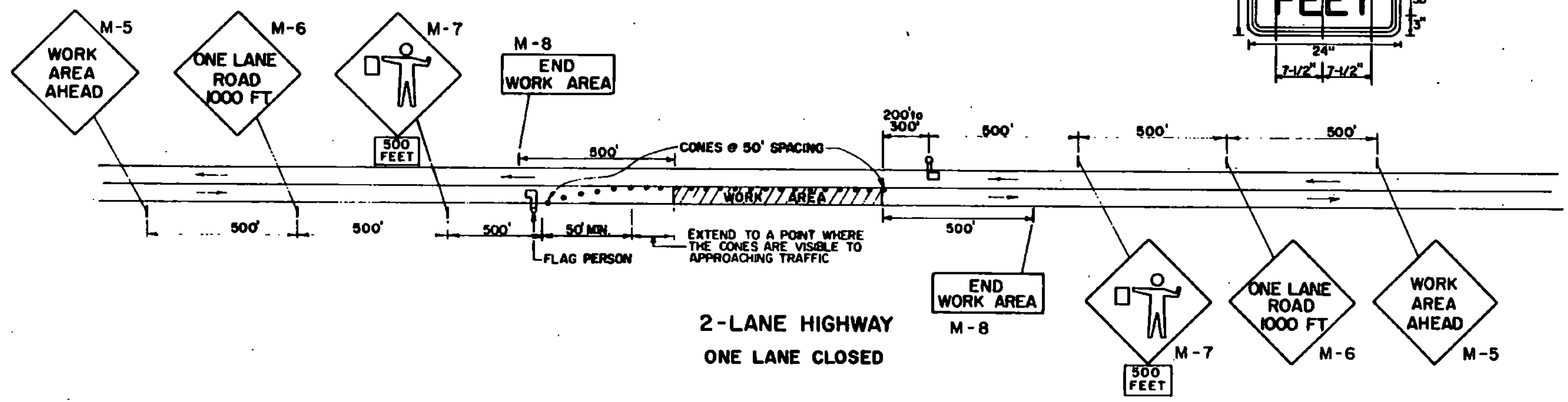
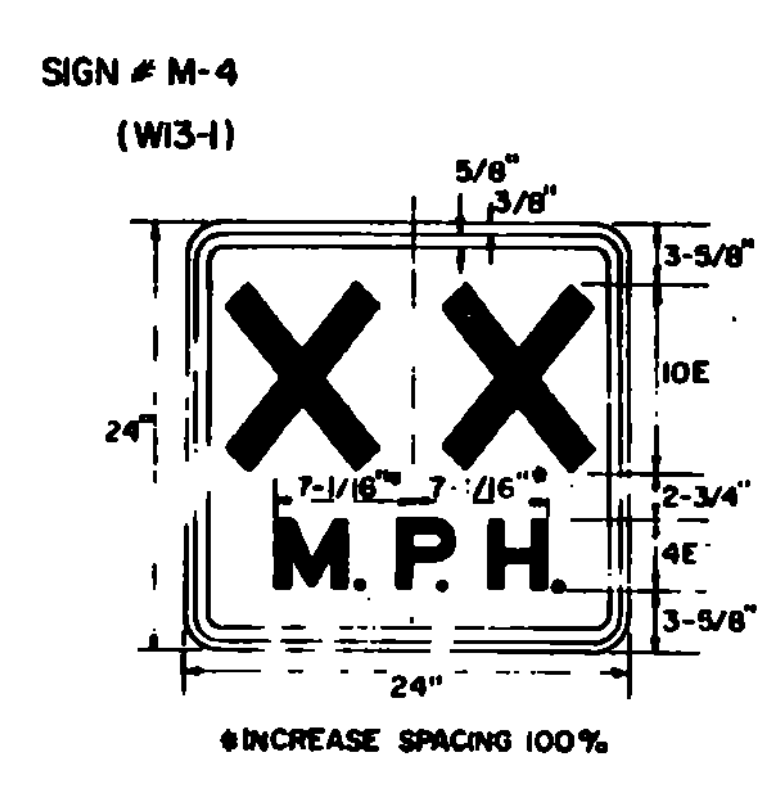
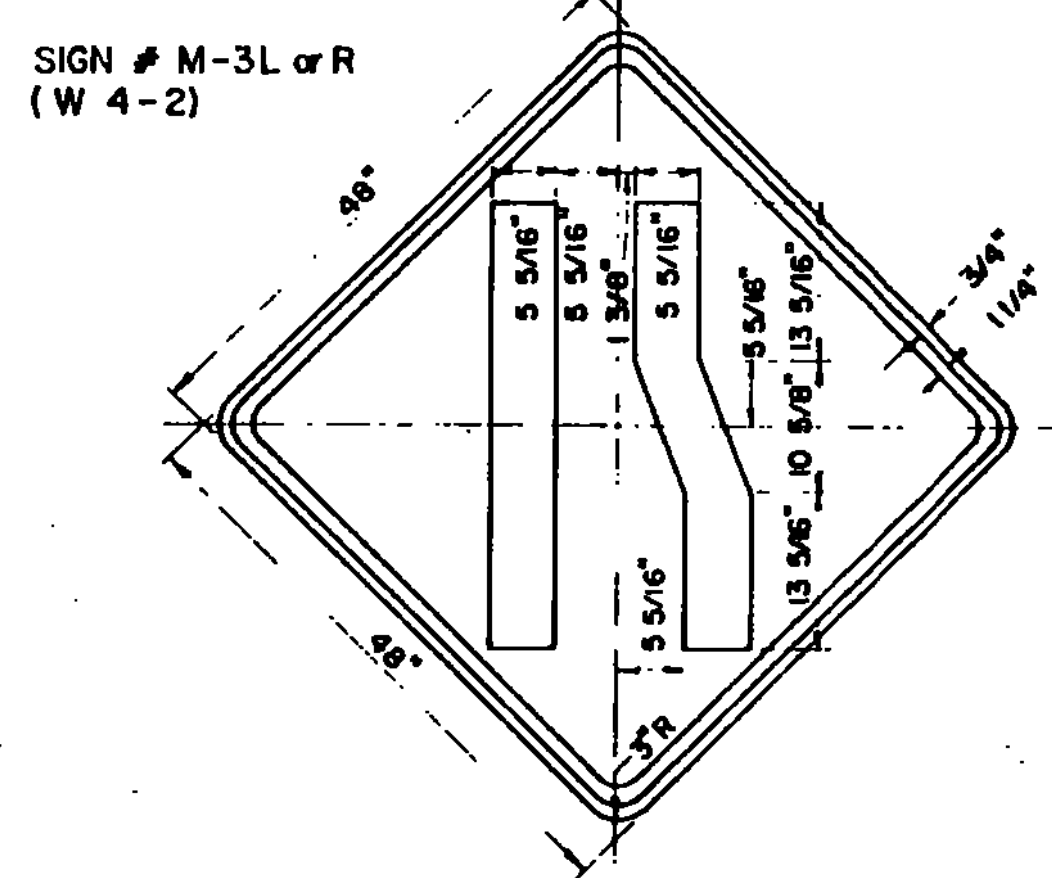
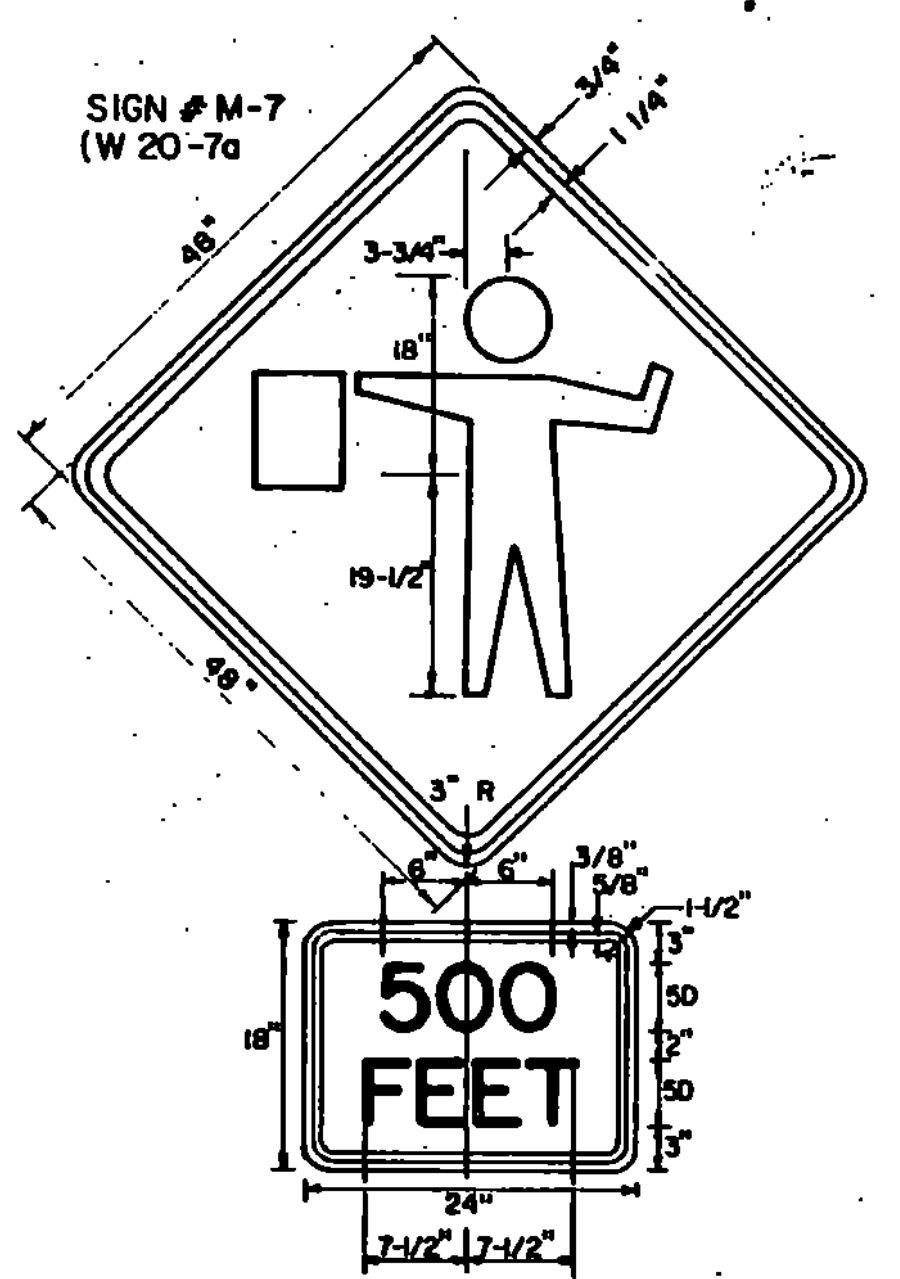
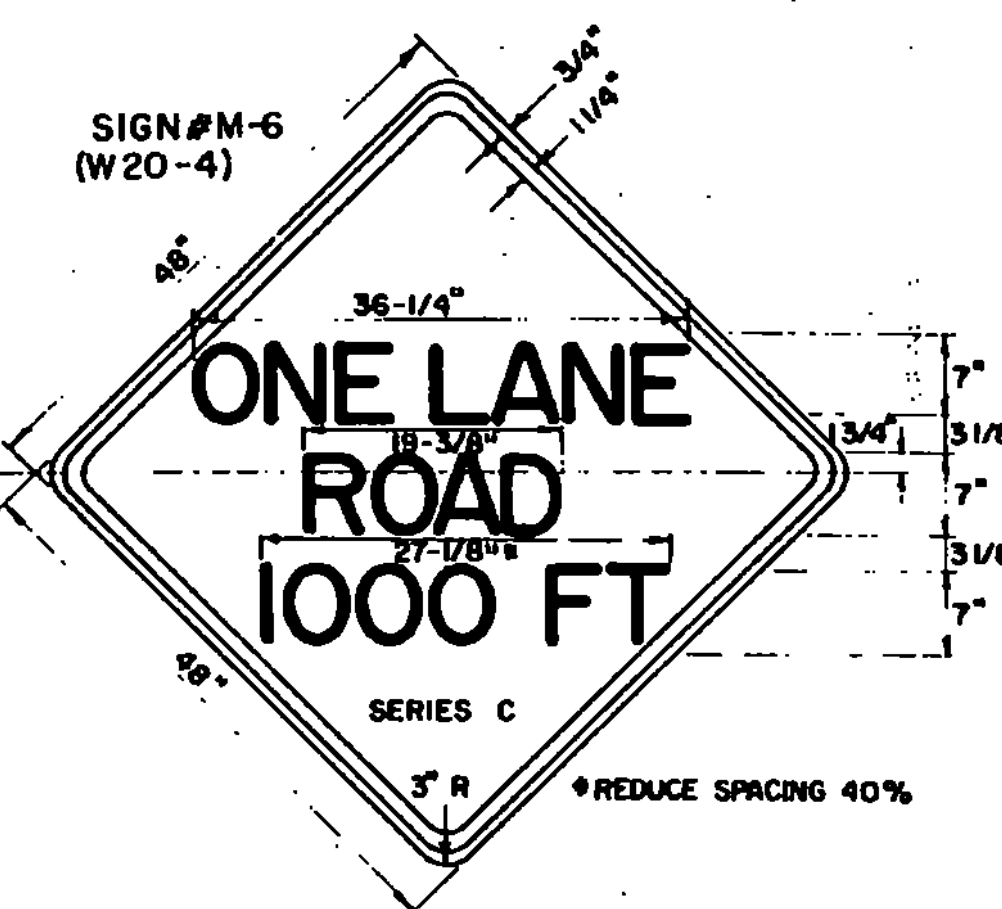
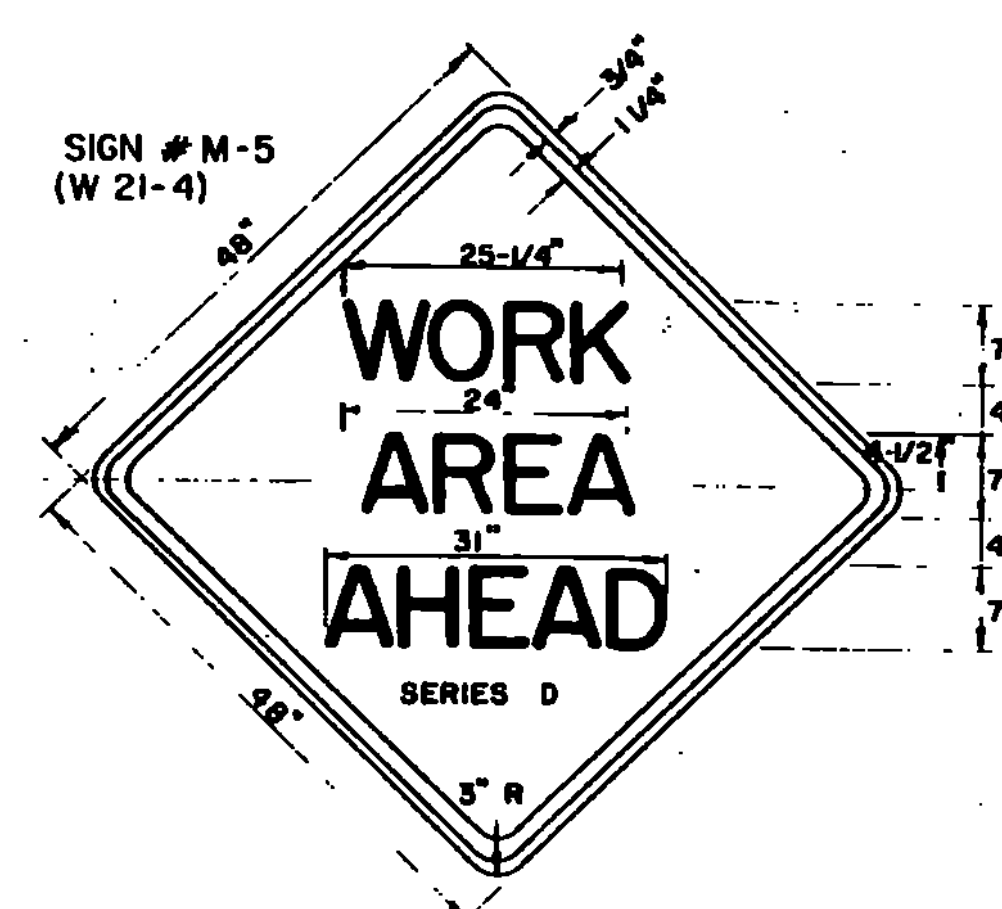
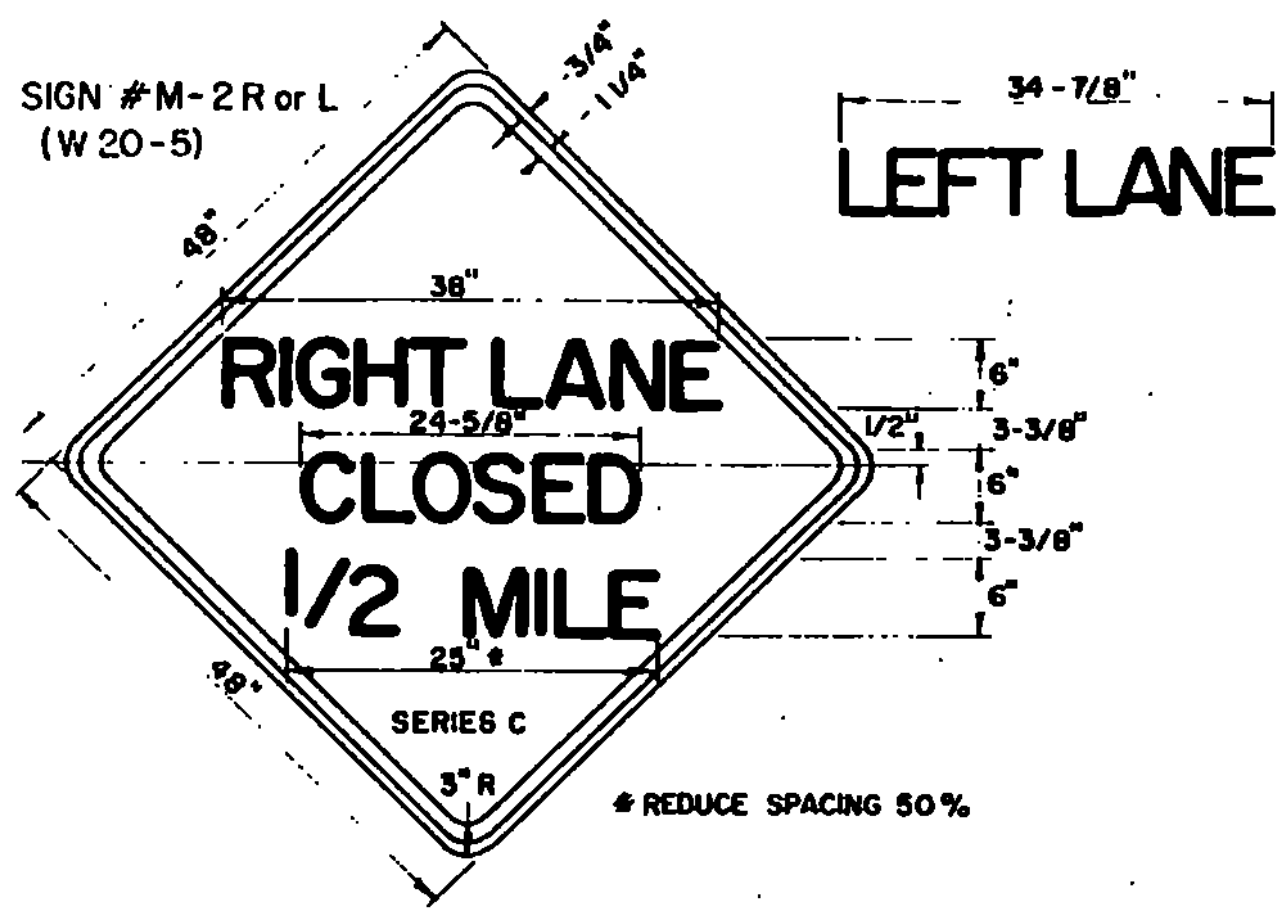
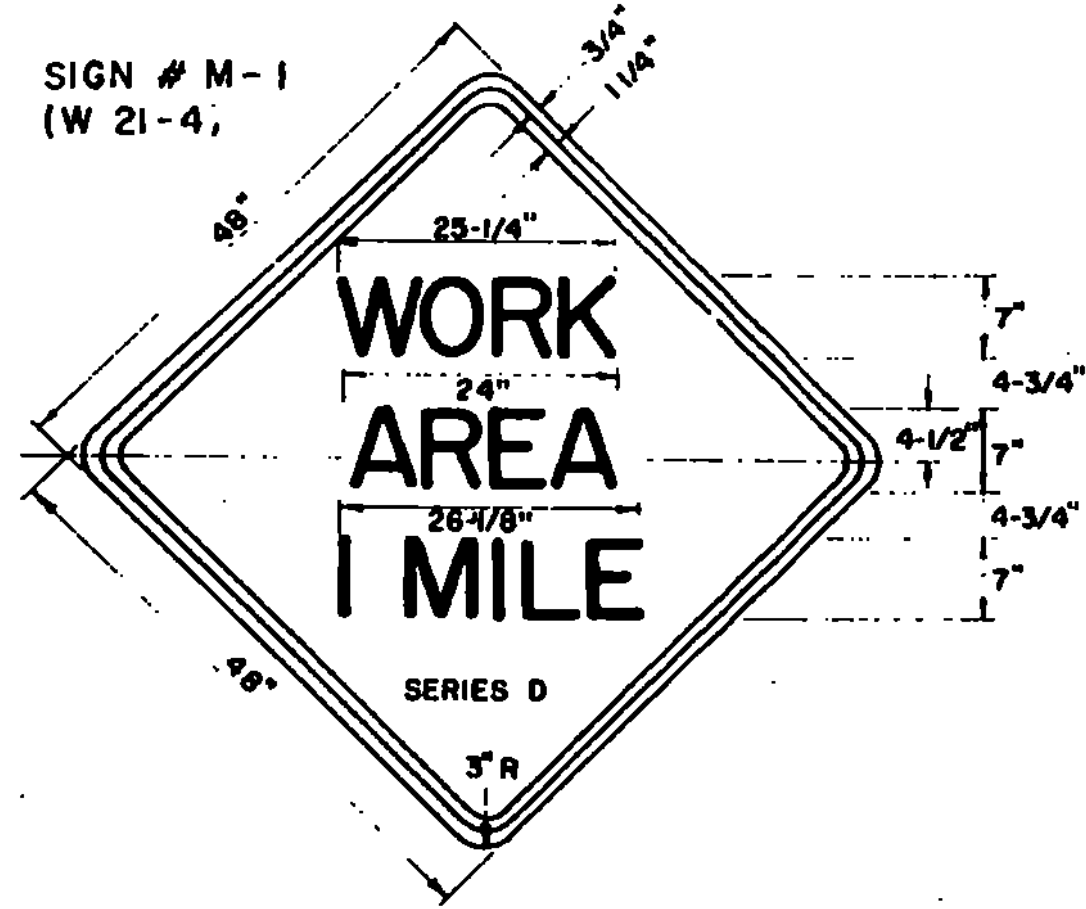
TRAFFIC SIGNS

BREAKAWAY BARRICADE DETAILS



STANDARD

E-7a



**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"x36".  
THIS SIGN SIZE REDUCTION IS FOR DAYTIME MAINTENANCE OPERATIONS OF SHORT DURATION.

- 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.

**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*

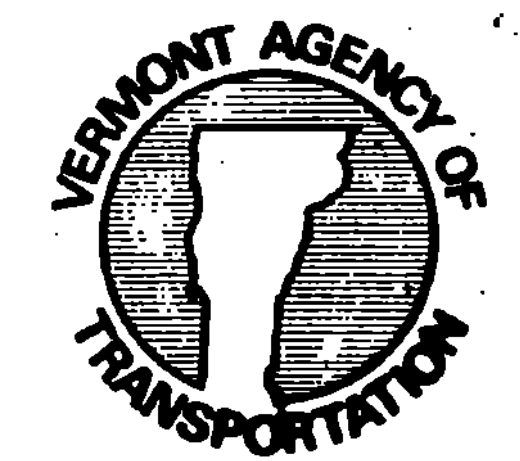
DATE: *Jan. 26, 1972*

CHIEF ENGINEER: *P. W. Arnold*

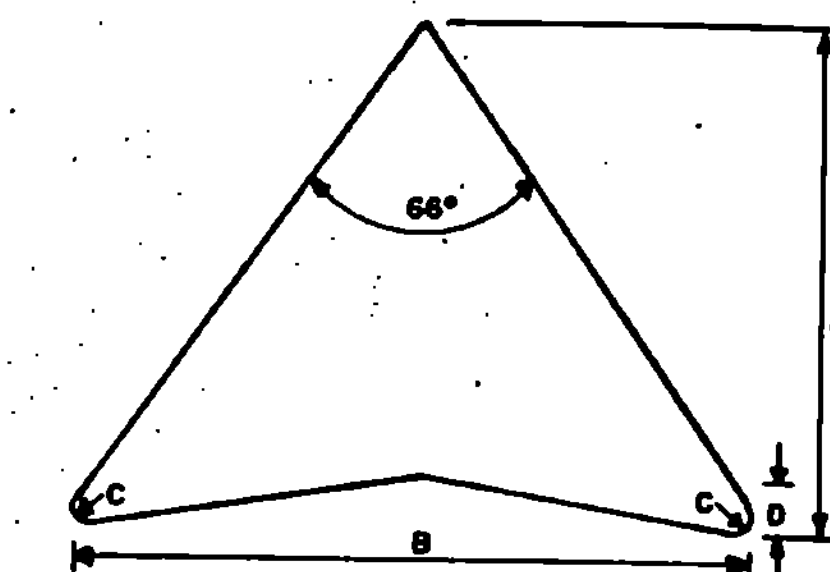
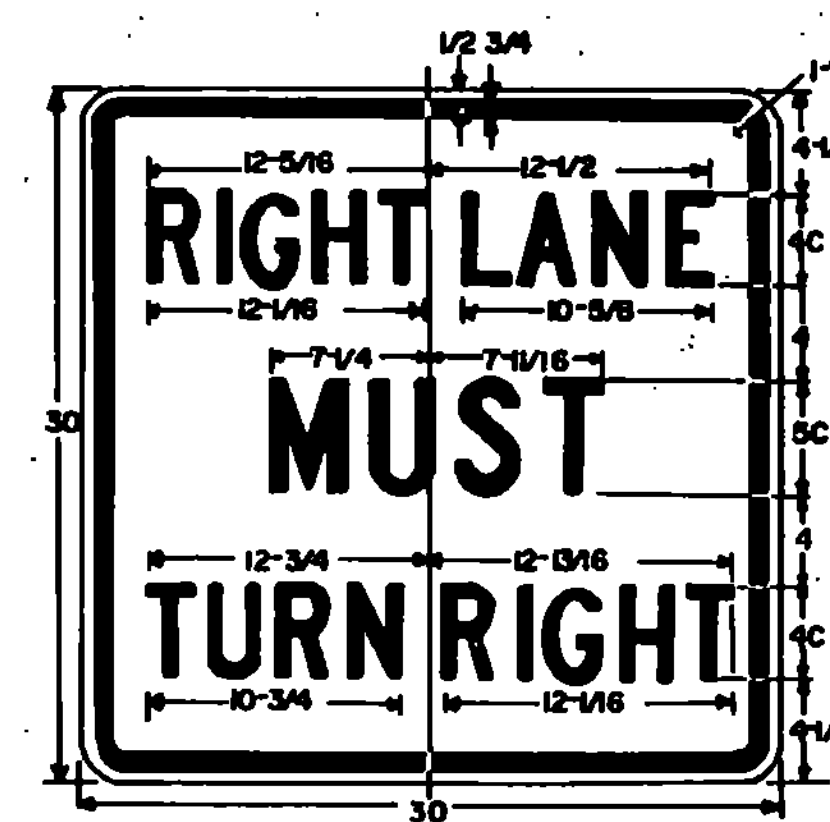
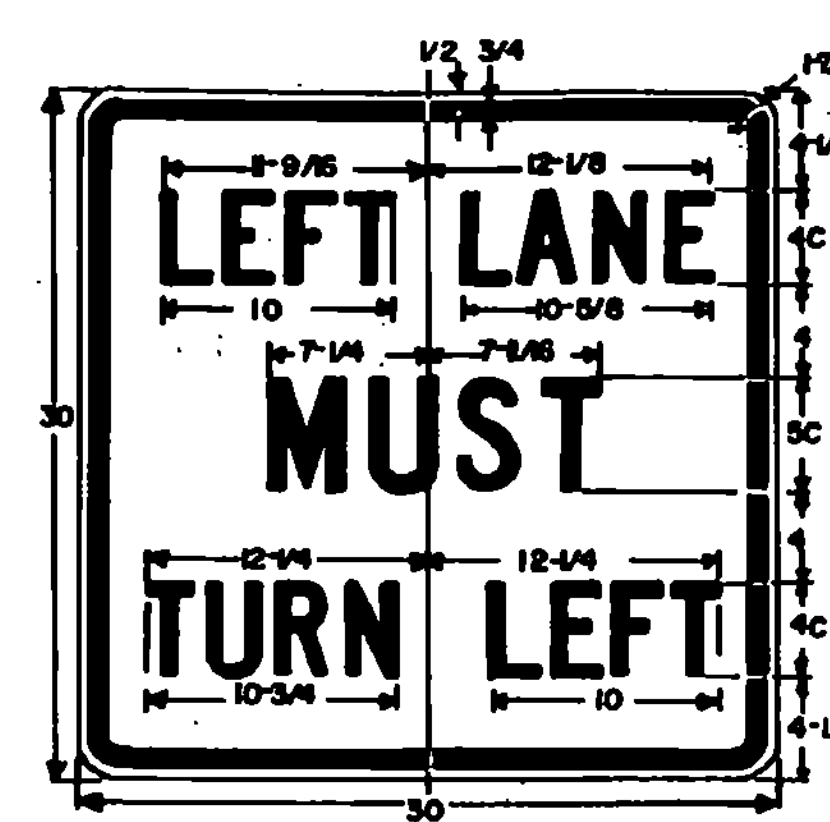
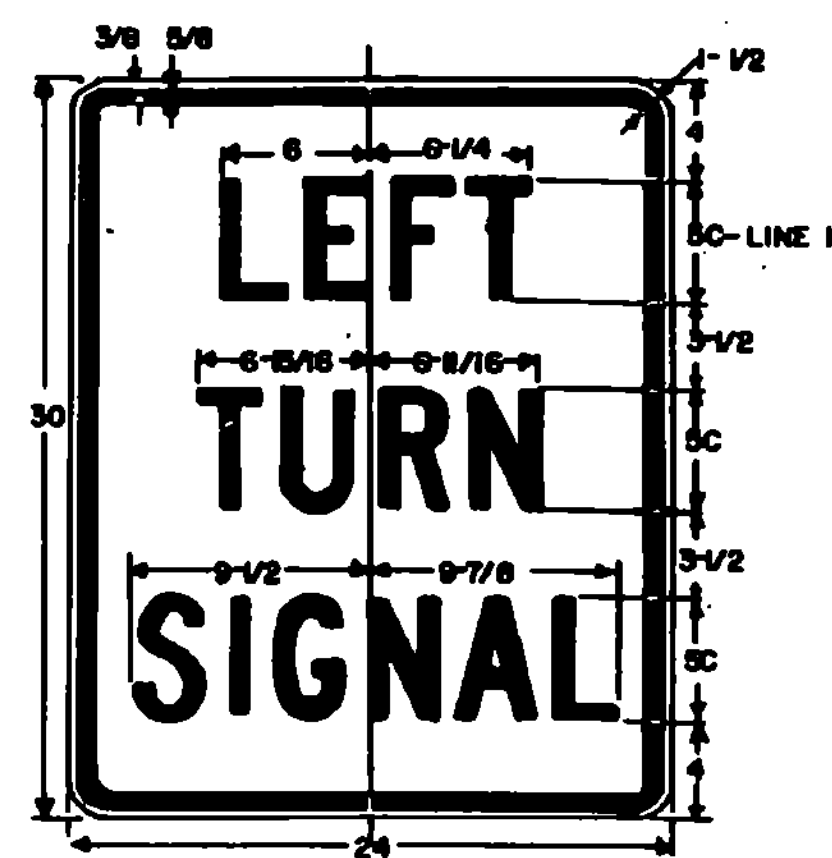
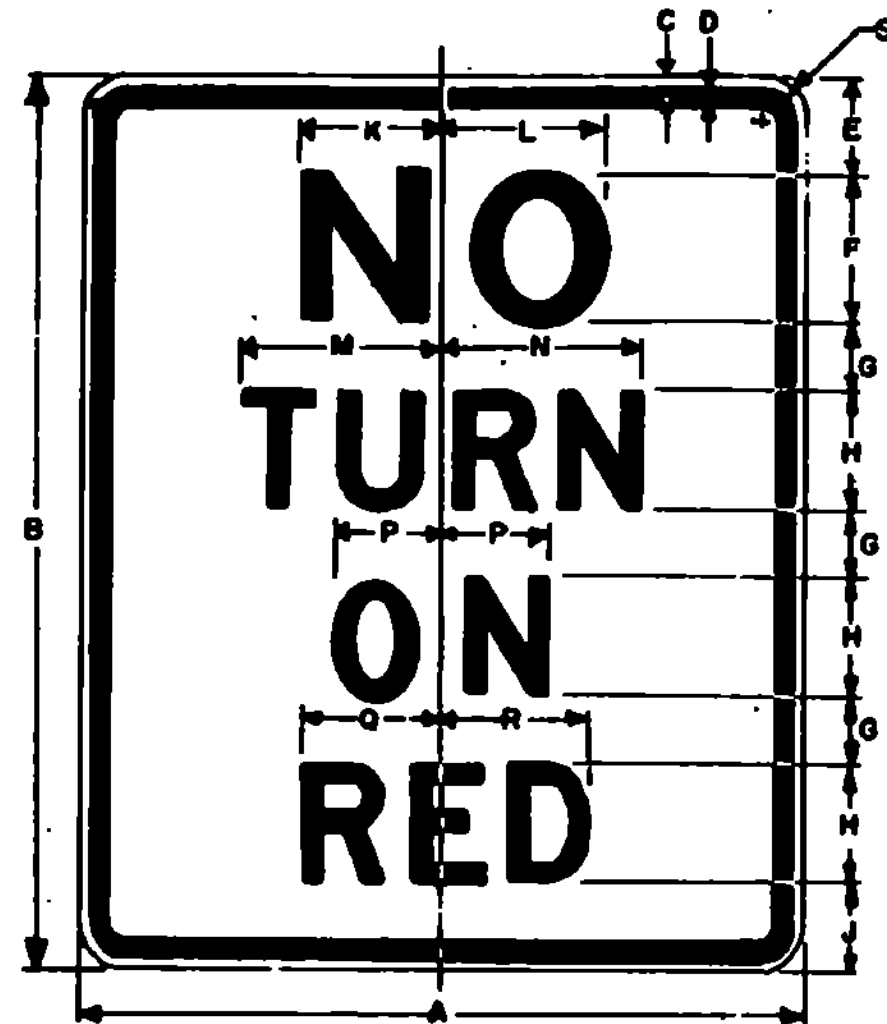
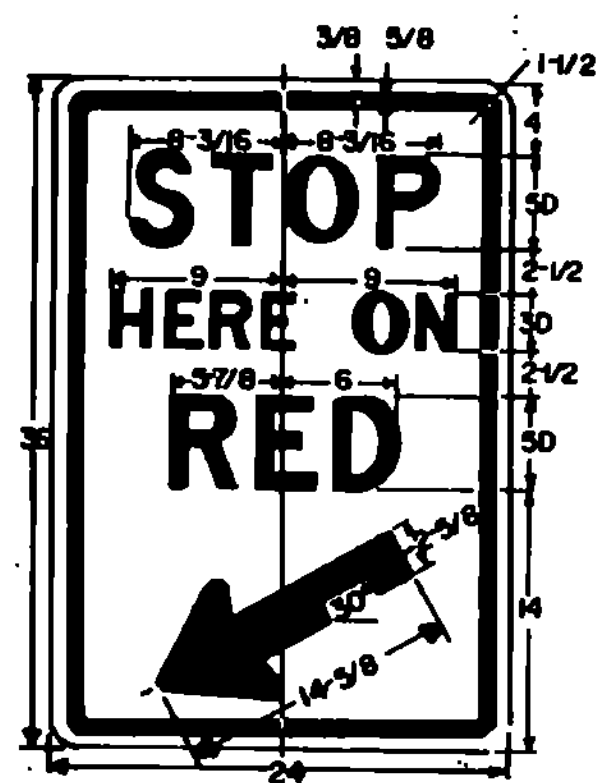
ASST. CHIEF ENGINEER: *E. H. O'Rourke*

HIGHWAY ENGINEER: *G. M. Lane*

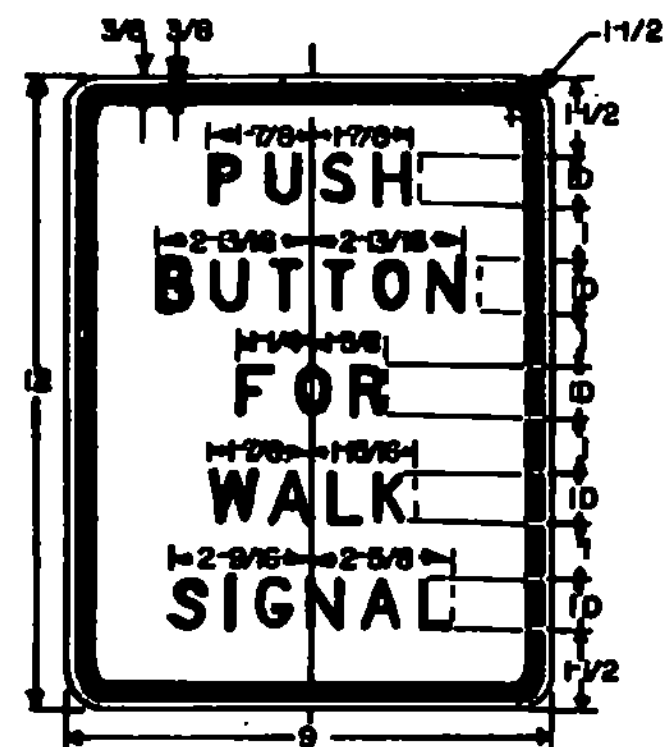
**TYPICAL MAJOR MAINTENANCE OPERATION  
(BRIDGE AND ROADWAY) APPROACH SIGNS**



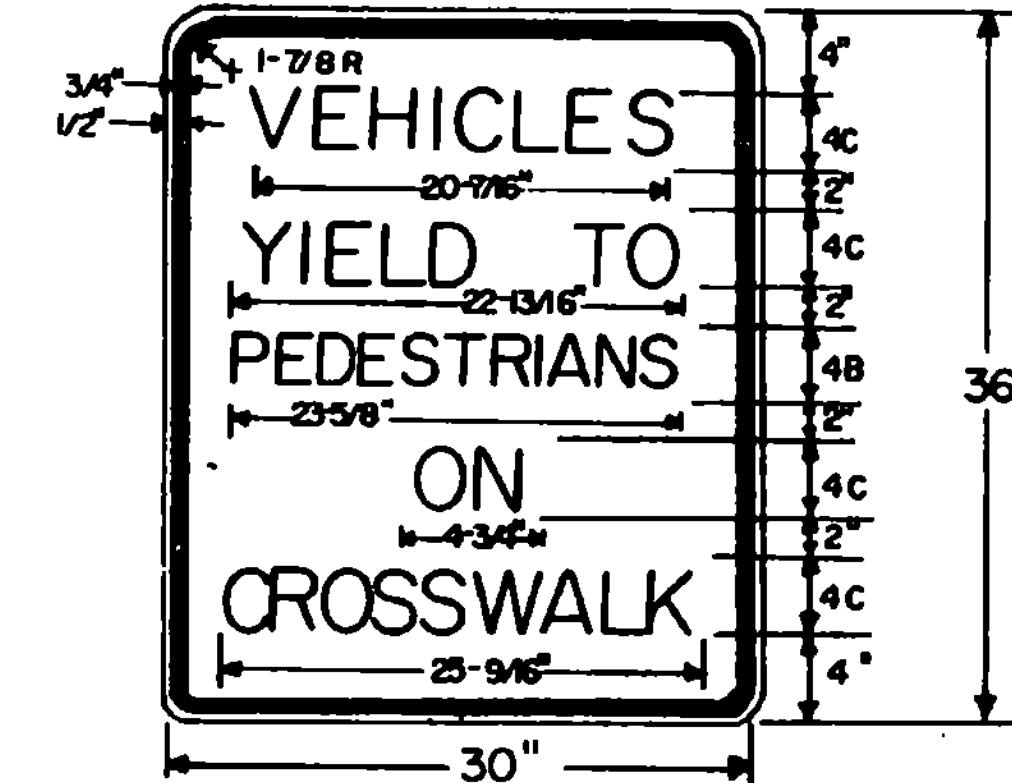
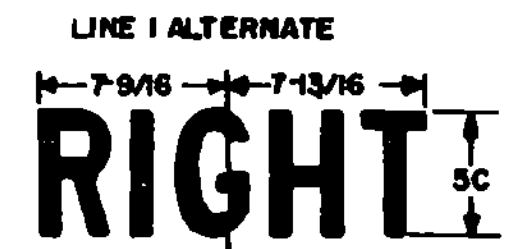
**STANDARD  
E-8**



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	J	K	L	M	N	P	Q	R	S
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	1-1/2
STD.	24	30	3/8	5/8	3-1/4	5E	2-1/4	4D	3	4-3/16	5-3/16	6-5/8	6-1/2	3-1/2	4-5/8	4-7/8	1-1/2
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	2-1/4



**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.

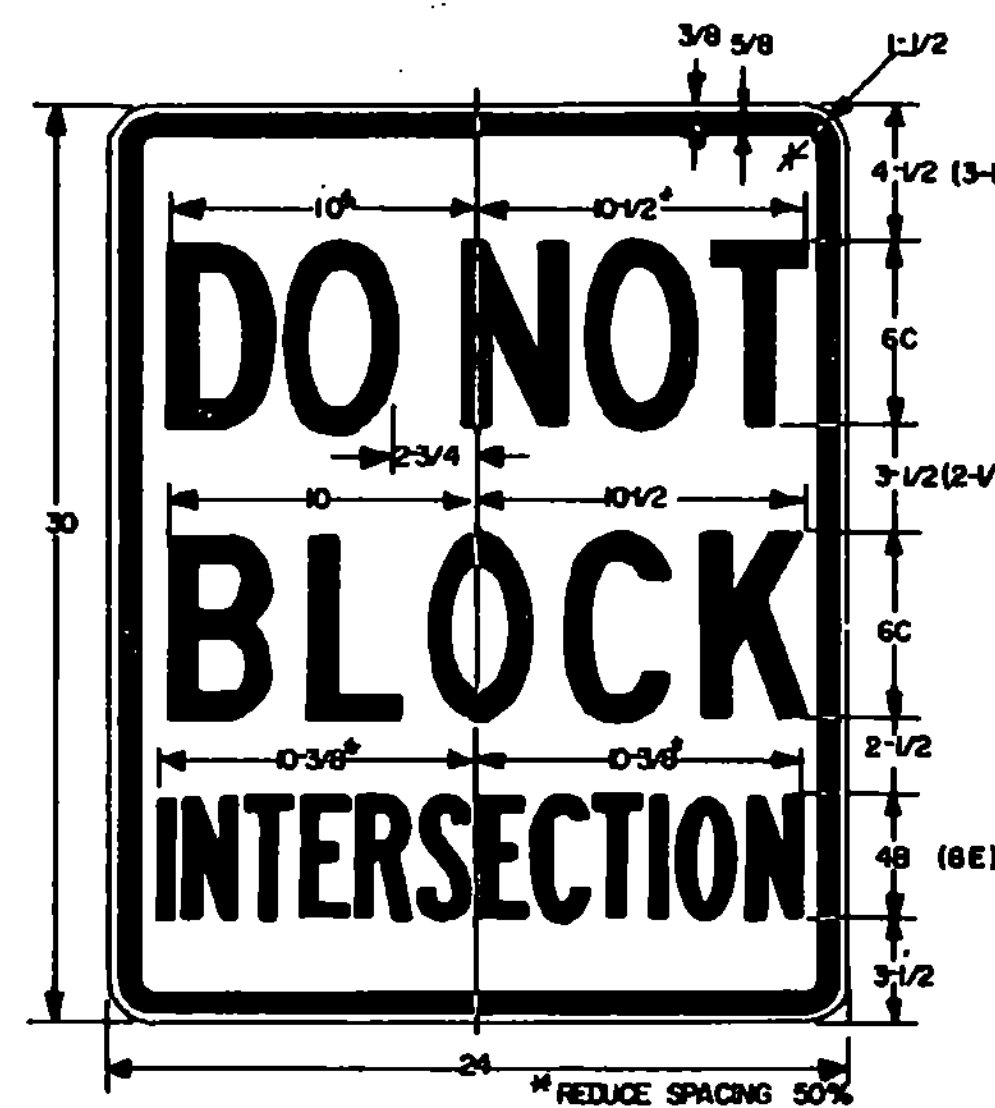
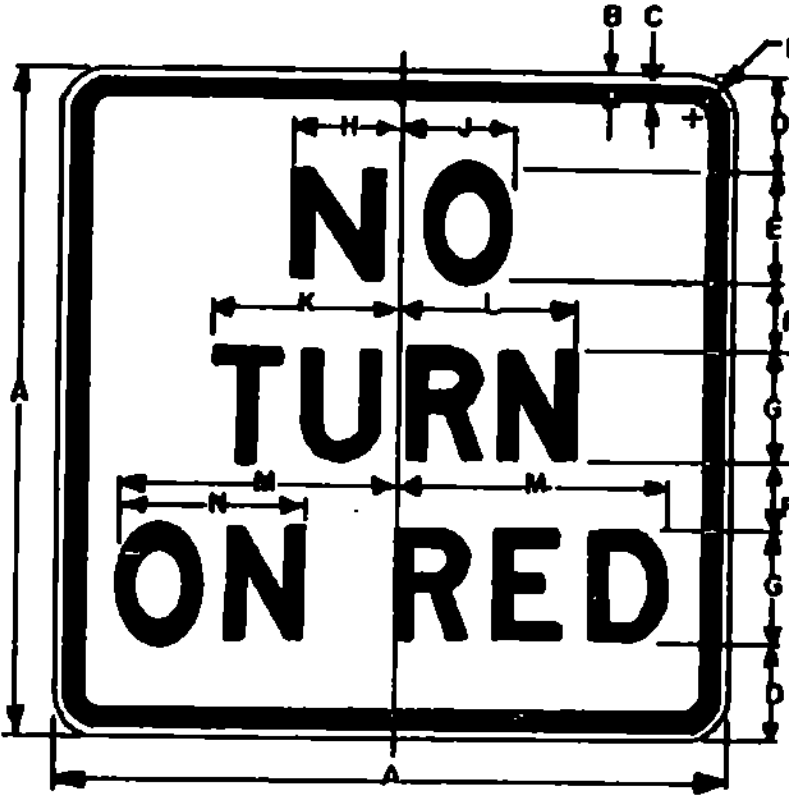
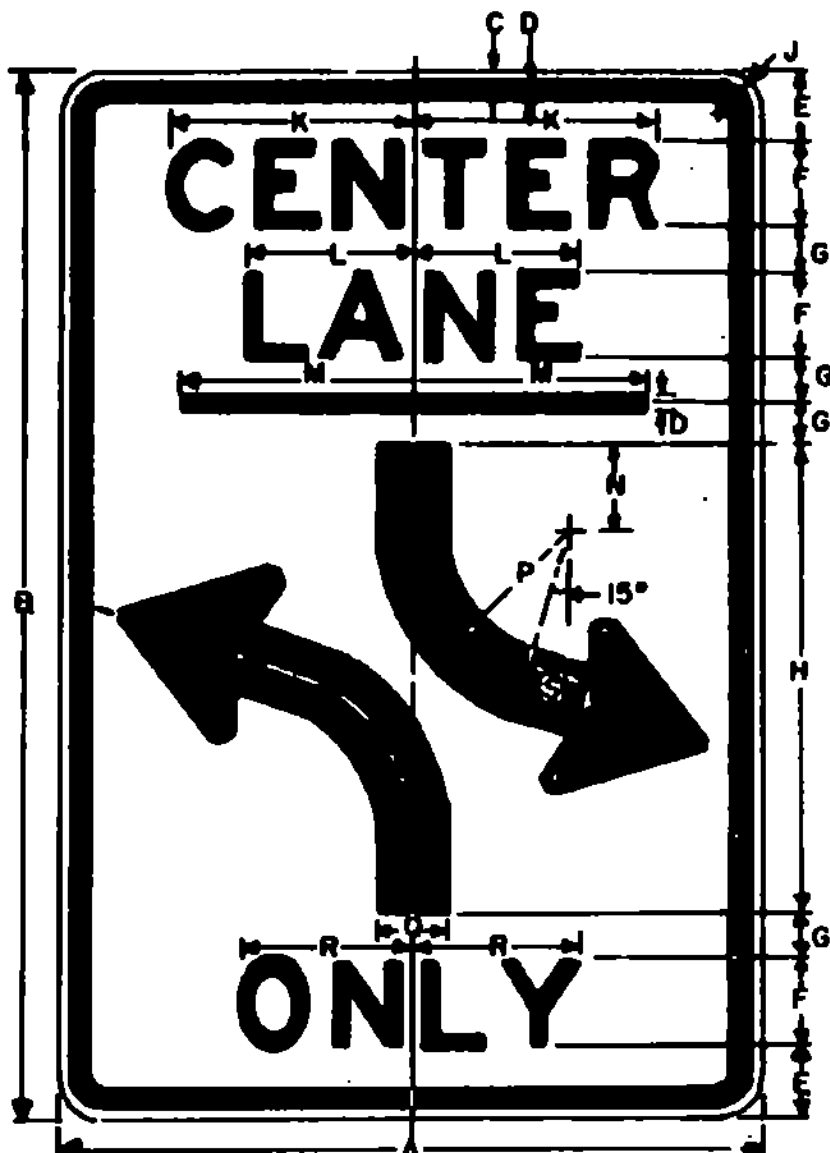
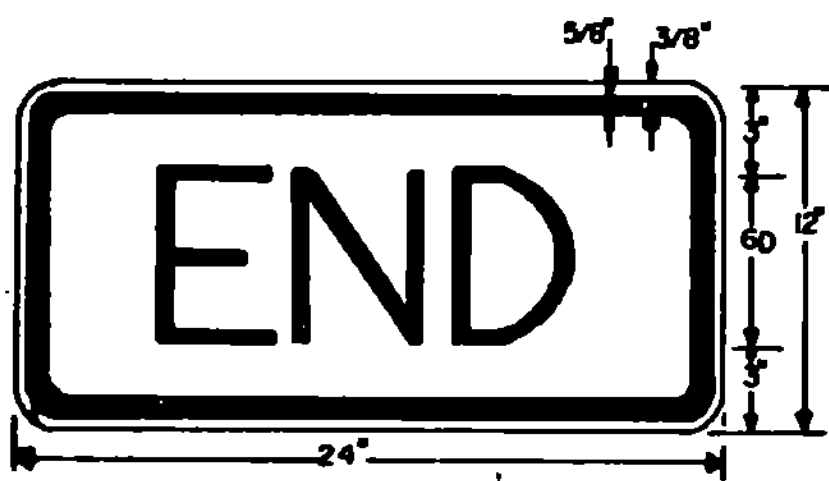
	9" X 12"	24" X 30"	36" X 36"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"
HIGH DENSITY OVERLAD PLYWOOD	1/2"	1/2"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE

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	J	K	L	M	N	P
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	4-1/8	6-3/8	6-1/2	9-1/2	6-1/2	1-1/2
SPECIAL	30	1/2	3/4	4-1/2	5E	3D	5D	4-3/8	5-3/8	8-1/4	8-1/8	11-7/8	7-3/4	1-7/8

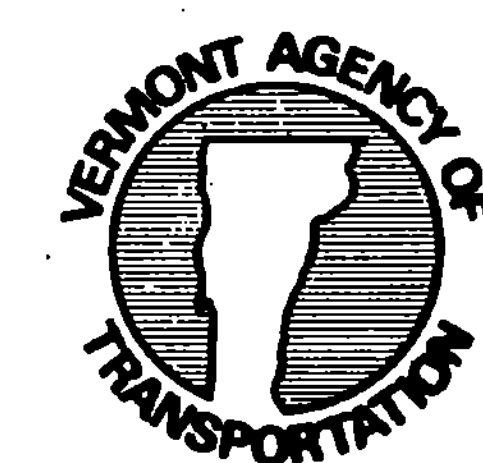
SIGN	DIMENSION (INCHES)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
STD. & MIN.	24	36	3/8	5/8	2-1/2	3E	1-1/2	15	1-1/2	8-7/16	5-3/4	8	2-7/2	6	2	5-5/16	1-1/2
SPECIAL	36	48	5/8	7/8	3-1/2	5E	1-1/2	20	2-1/4	11-1/16	9-1/2	12	3	8	3	9-7/8	2

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

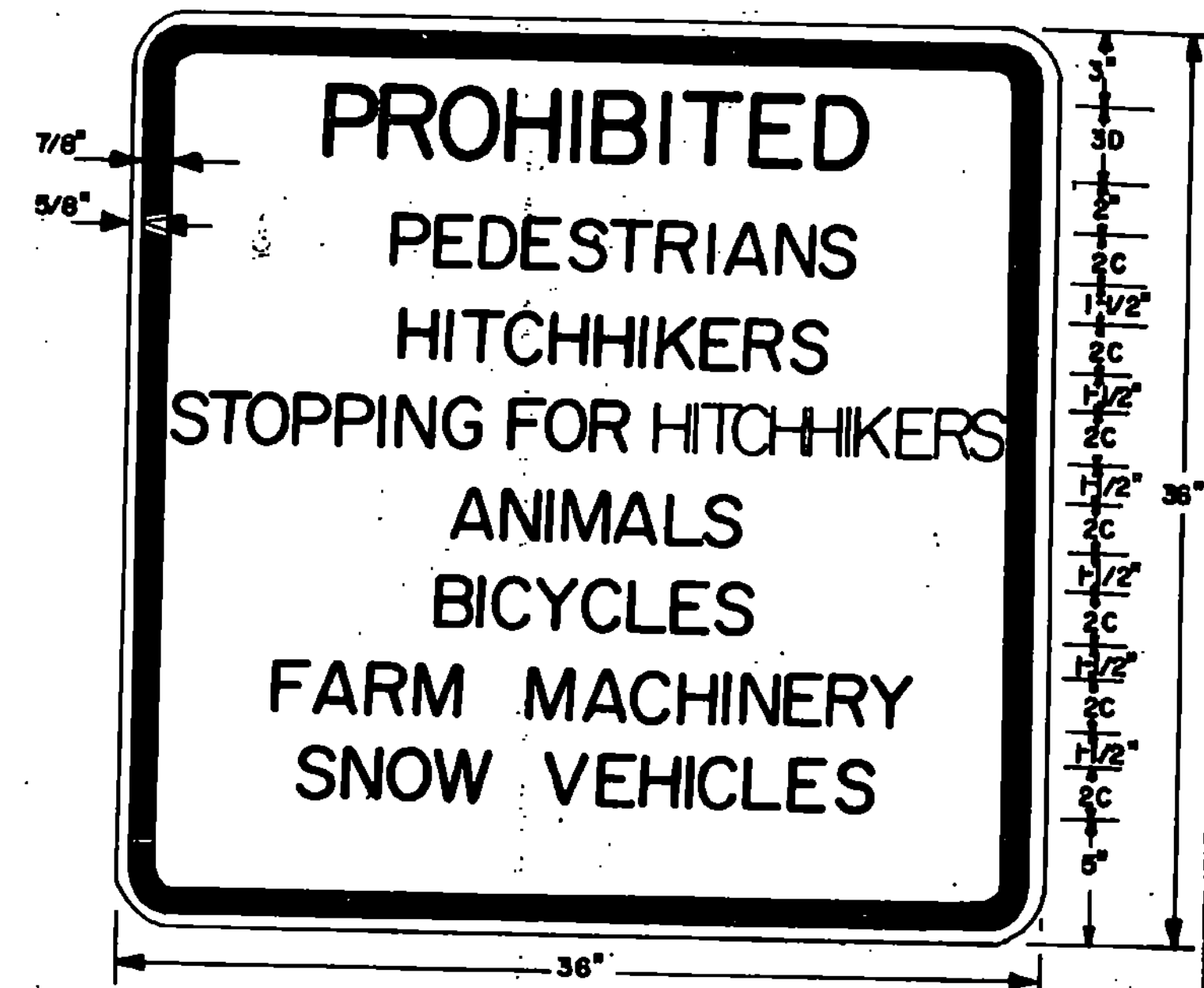
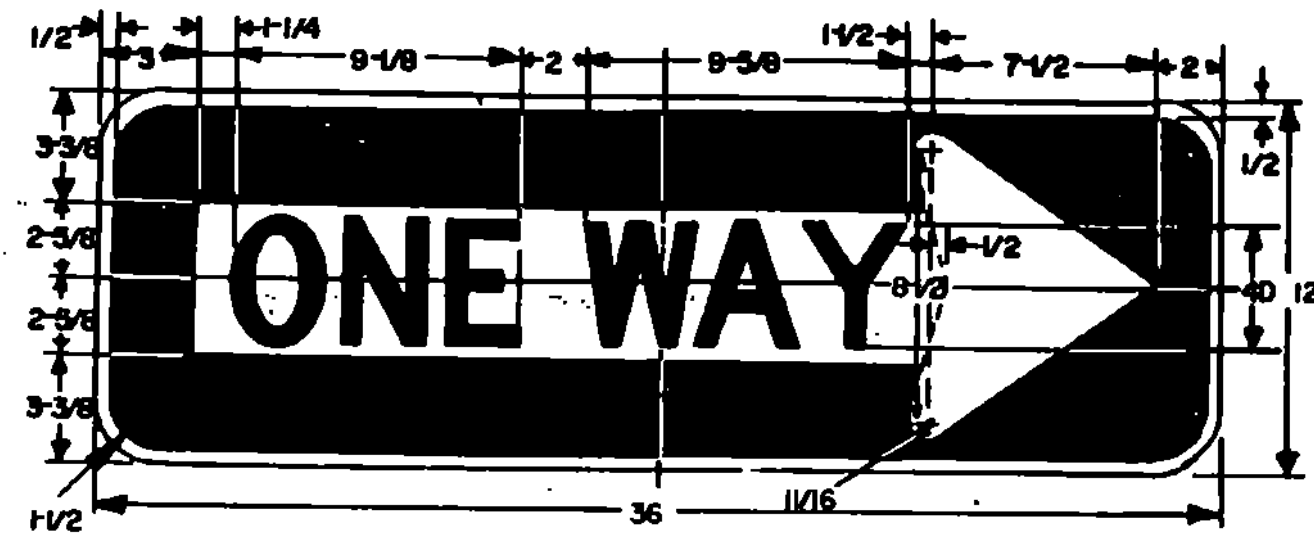
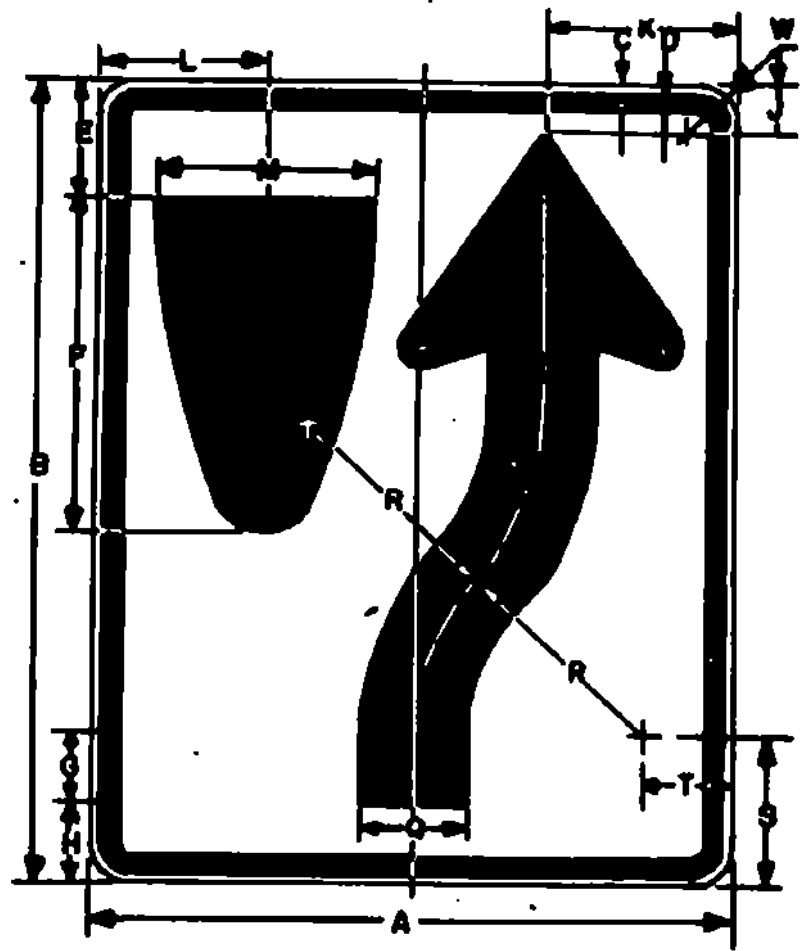
REVISIONS AND CORRECTIONS  
JULY 2, 1984 - ADDITIONAL SIGNS ADDED  
FEB. 3, 1986 - UPDATED TO 1985 SPECIFICATIONS

APPROVED: JULY 29, 1981  
DATE  
*S. J. Gage PE*  
DIRECTOR OF ENGINEERING AND CONSTRUCTION  
*Arthur J. Goss*  
CHIEF OF DESIGN  
*Don A. Jones*  
TRANSPORTATION DESIGN ENGINEER

# REGULATORY SIGNS

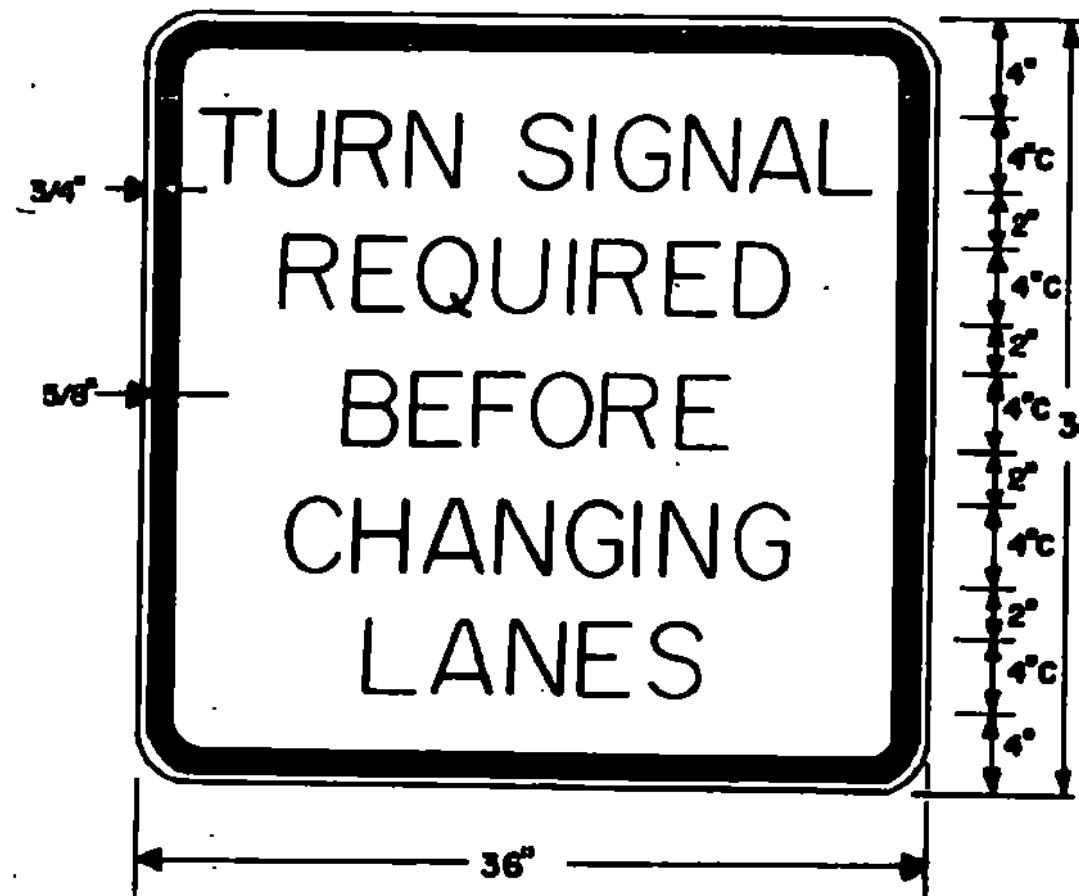


STANDARD  
E-15



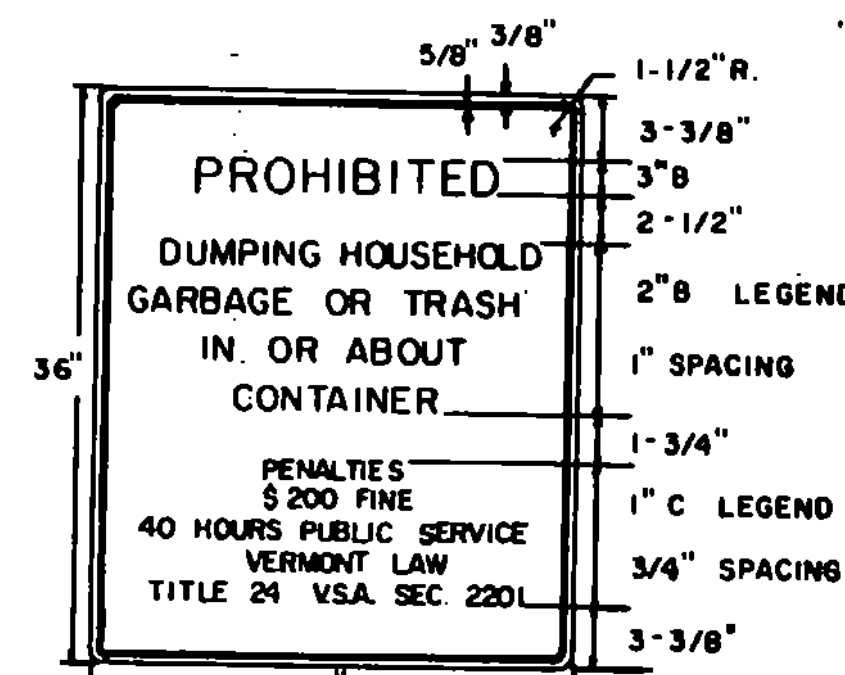
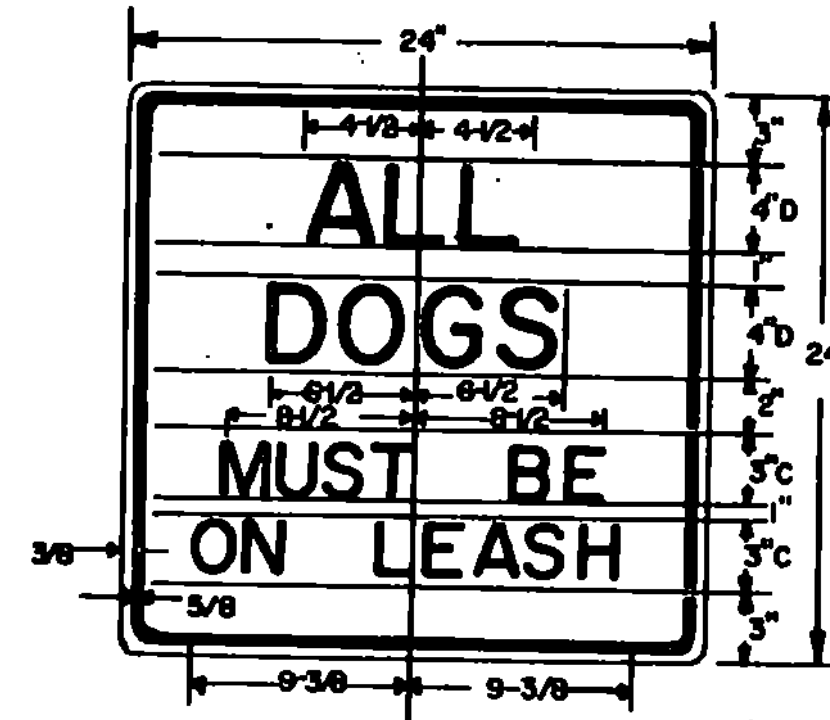
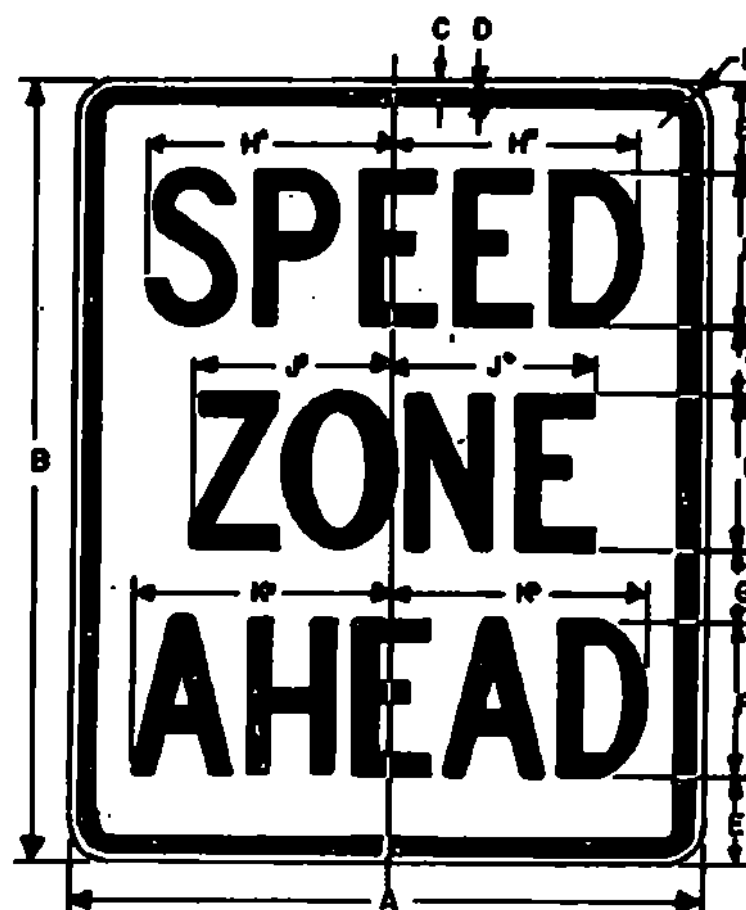
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	I	J	K
MIN.	18	24	3/8	5/8	3-3/8	9-3/8	1-7/8	2-1/4	1-3/8	5-1/2	
STD.	24	30	3/8	5/8	4-1/2	12-1/2	2-1/2	3	1-7/8	7-3/8	
EXPWY.	36	48	5/8	7/8	6-3/4	18-3/4	3-3/4	4-1/2	2-13/16	11-1/8	
FWY.	48	60	3/4	1-1/4	9	25	5	6	3-3/4	14-13/16	

SIGN	DIMENSIONS (INCHES)										
	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	45	3	6	13-1/2	6-1/4	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



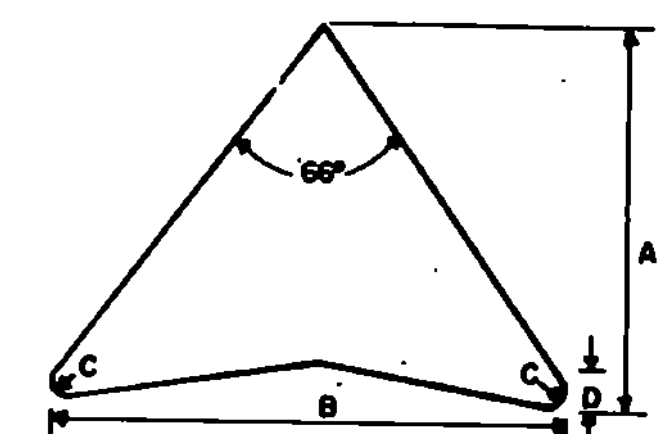
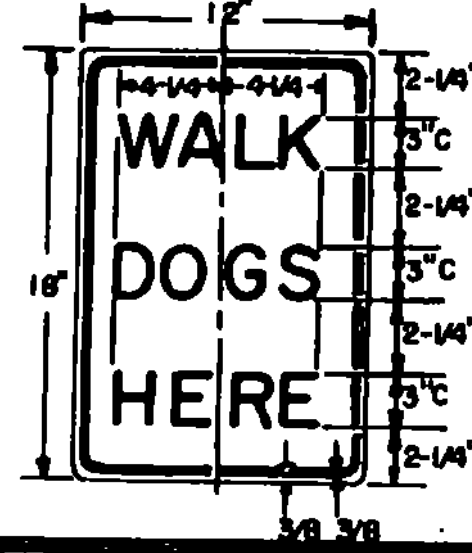
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	I	J	K
MIN.	18	24	3/8	5/8	3	3E	2	8E	1-1/2	7-3/16	9-1/2
STD.	24	30	3/8	5/8	4	4E	2	10E	1-1/2	9-9/16	7-3/16
EXPWY.	36	48	5/8	7/8	6	6E	5	14E	2-1/4	14-3/8	11
FWY.	48	60	3/4	1-1/4	8	8E	4	20E	3	19-1/8	14-5/8

SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	I	J	K
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	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	I	J	K
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	13-13/16	17-1/2	3

FOR STD SIZE, REDUCE SPACING 40%.



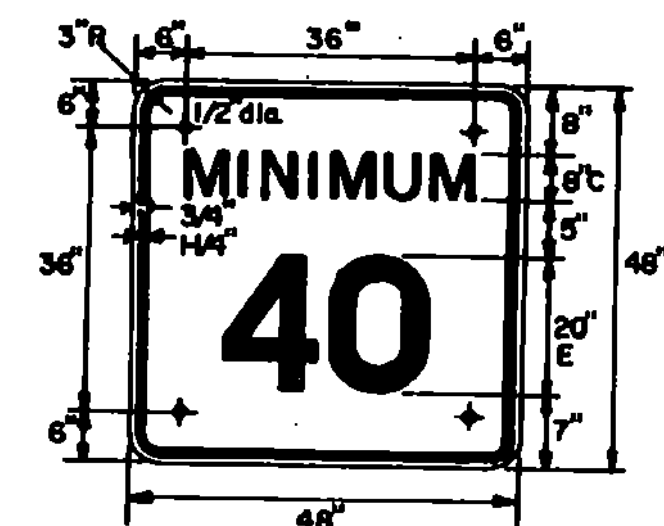
ARROW HEAD	SIZE	DIMENSIONS (INCHES)			
		A	B	C	D
MINIMUM	18X24	7-1/8	8-1/2	5/8	1-1/8
STANDARD	24X30	9-1/2	11-3/8	1	1-1/2
EXPRESSWAY	36X48	14-1/4	17	1-3/8	2-1/4
FREEWAY	48X60	19	22-5/8	1-7/8	3

SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	I	J	K	L		
EXPWY.	30	24	5/8	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

\* FOR FWY SIZE, REDUCE SPACING 50%.

**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.



TO BE USED WITH "SPEED LIMIT 55" SIGN-FWY ONLY.

**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.

FLAT SHEET ALUMINUM	24" X 24"	36" X 12"
HIGH DENSITY OVERLAIN PLYWOOD	24" X 30"	36" X 36"
GALVANIZED FLAT SHEET STEEL	30" X 24"	36" X 48"
	30" X 30"	48" X 36"
	48" X 60"	48" X 60"
	0.060"	0.100"
	1/2"	1/2"
	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.

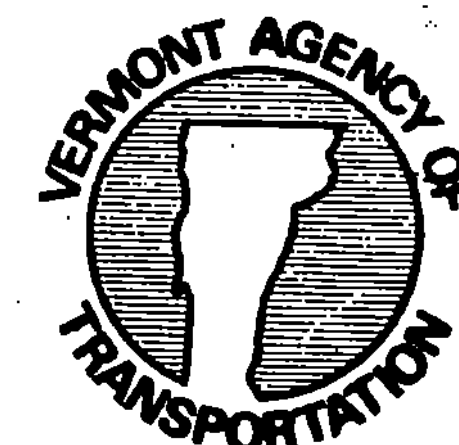
**SPECIFICATIONS:**  
REGULATORY SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

**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.

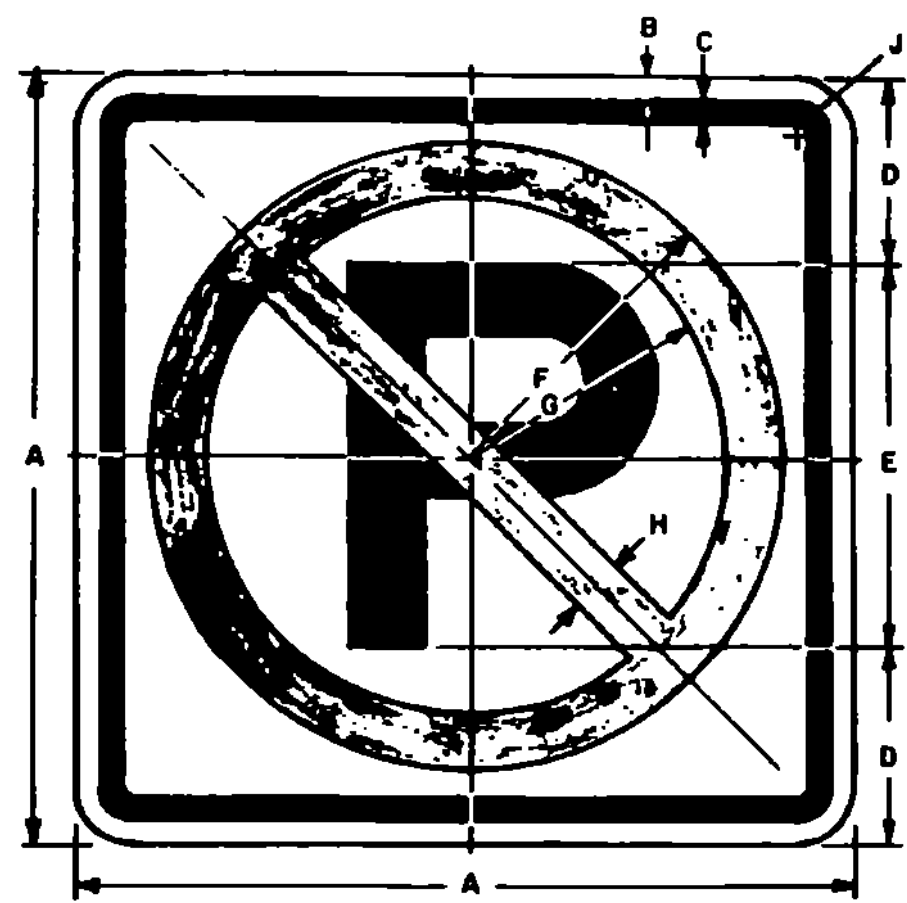
**REVISIONS AND CORRECTIONS**  
SEPT. 28, 1984 - ADDED "MINIMUM 40" SIGN - CHANGED "SPEED LIMIT 50" (FWY - G & H)  
- CHANGED "PROHIBITED DUMPING HOUSEHOLD GARBAGE" SIGN  
DEC. 27, 1984 - CLARIFIED KEEP RIGHT SYMBOL  
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED  
DATE JULY 18, 1984  
DIRECTOR OF ENGINEERING AND CONSTRUCTION  
*Arthur J. Goss*  
CHIEF OF DESIGN  
*Paul C. Egan*  
SURVEY AND PLANS ENGINEER

**REGULATORY SIGNS**

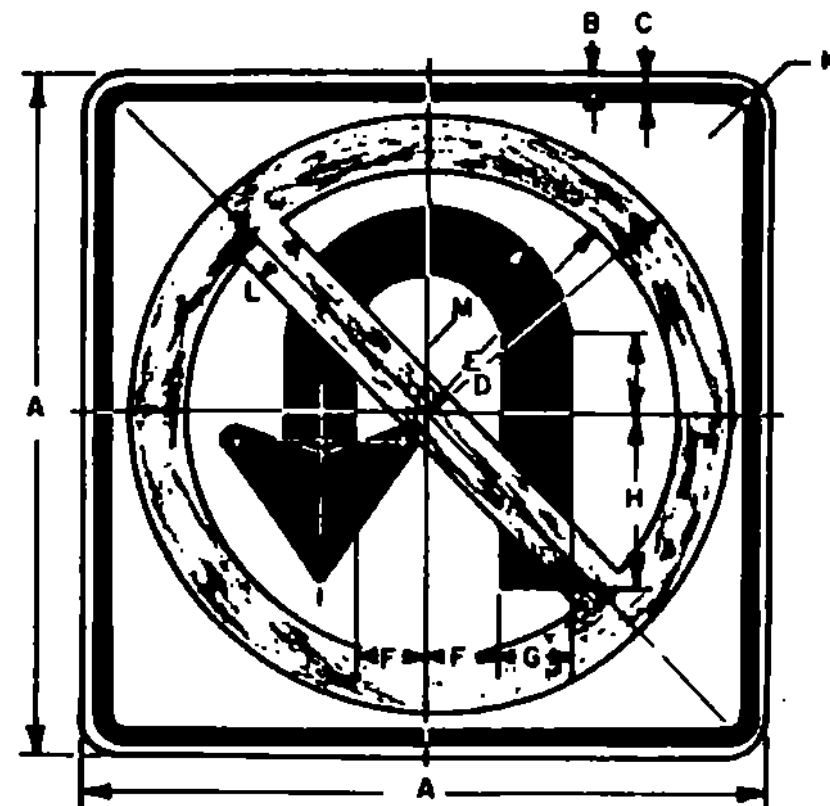


**STANDARD E-15B**



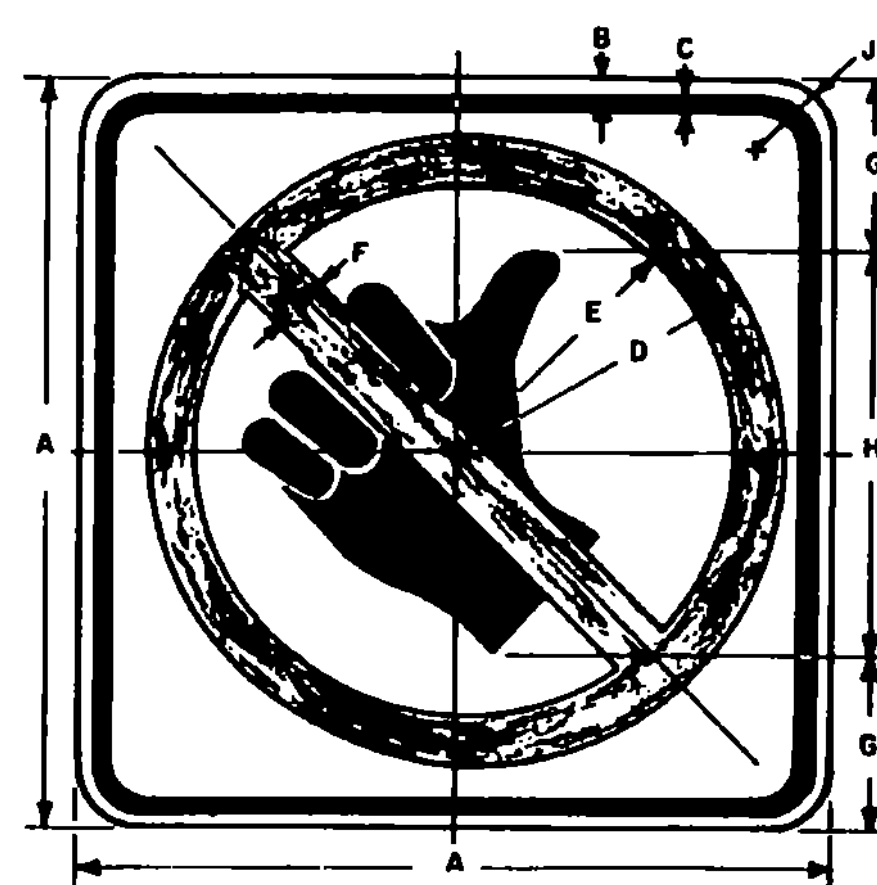
COLORS  
CIRCLE AND DIAGONAL - RED (REFL-RURAL)  
SYMBOL AND BORDER - BLACK (NON-REFL)  
BACKGROUND - WHITE (REFL-RURAL)

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	



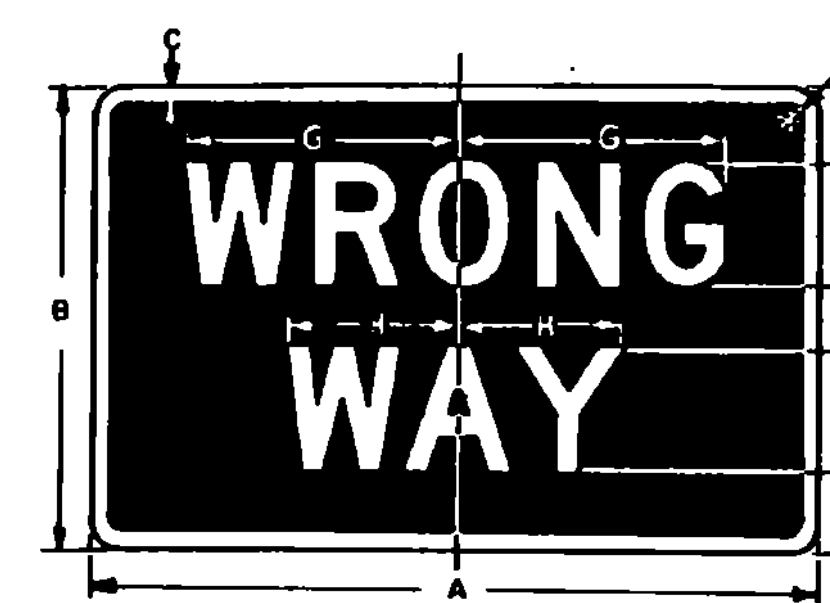
COLORS  
CIRCLE AND DIAGONAL - RED (REFL)  
ARROW AND BORDER - BLACK (NON-REFL)  
BACKGROUND - WHITE (REFL)

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	



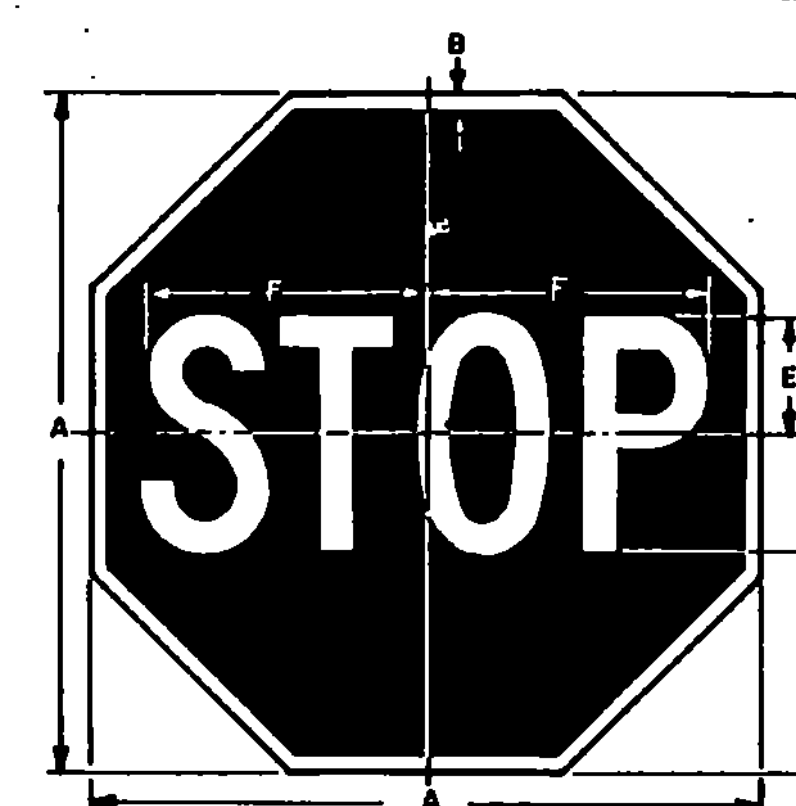
COLORS  
CIRCLE AND DIAGONAL - RED (REFL)  
SYMBOL AND BORDER - BLACK (NON-REFL)  
BACKGROUND - WHITE (REFL)

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	



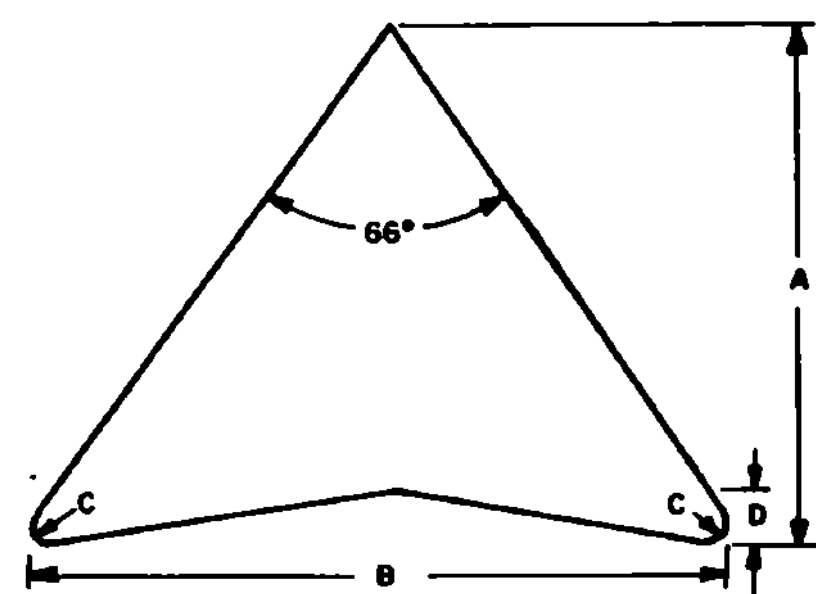
COLORS  
LEGEND - WHITE (REFL)  
BACKGROUND - RED (REFL)

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	

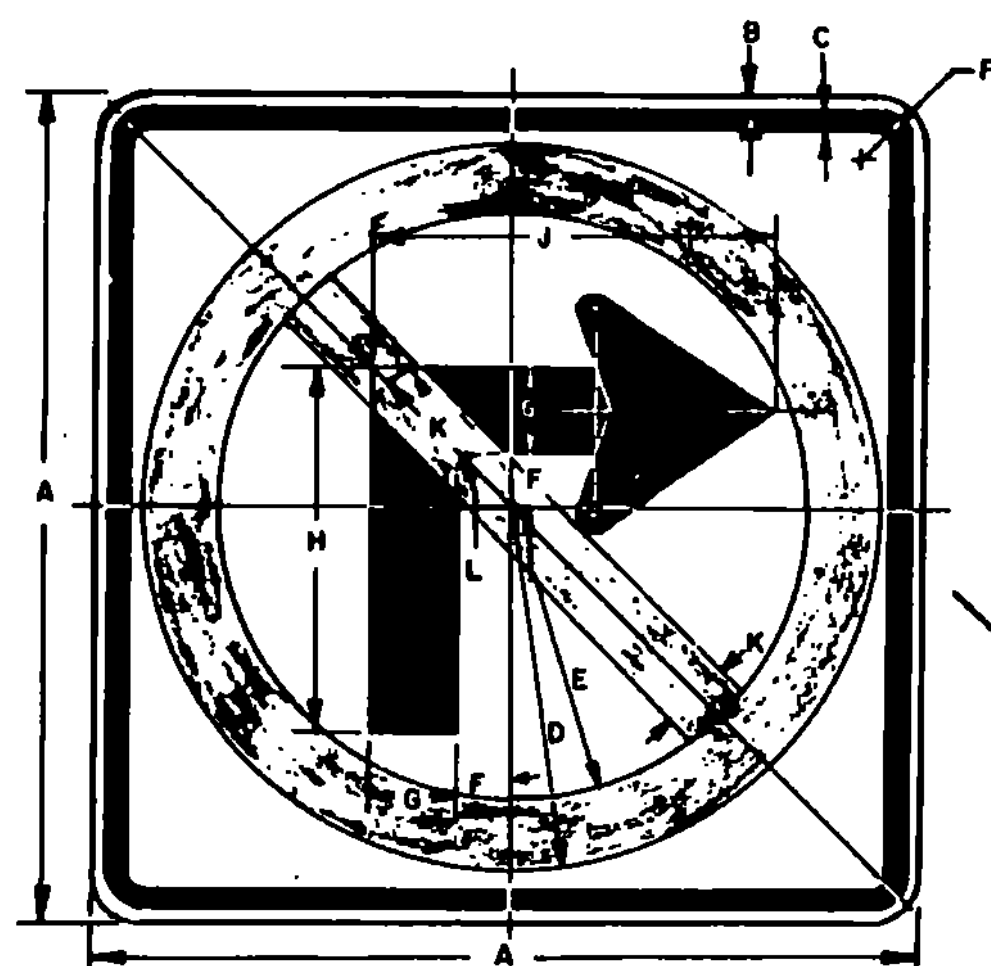


COLORS  
LEGEND - WHITE (REFL)  
BACKGROUND - RED (REFL)

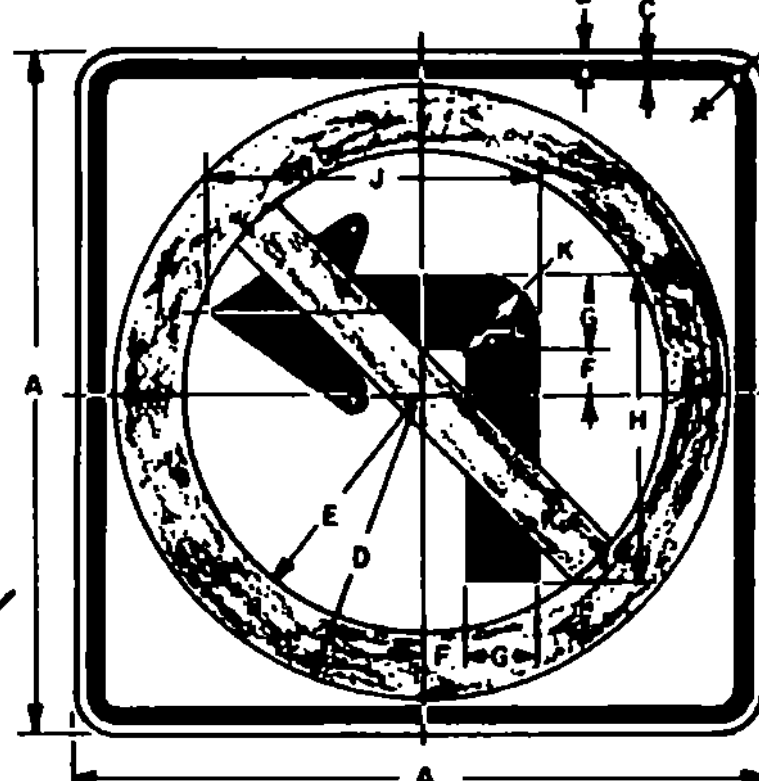
SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
BIKE	18	3/8	6	6C	3	7-3/4
MIN.	24	5/8	8	8C	4	10
STD.	30	3/4	10	10C	5	12-1/2
EXPWY.	36	7/8	12	12C	6	15
SPECIAL	48	1-1/4	16	16C	8	20



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

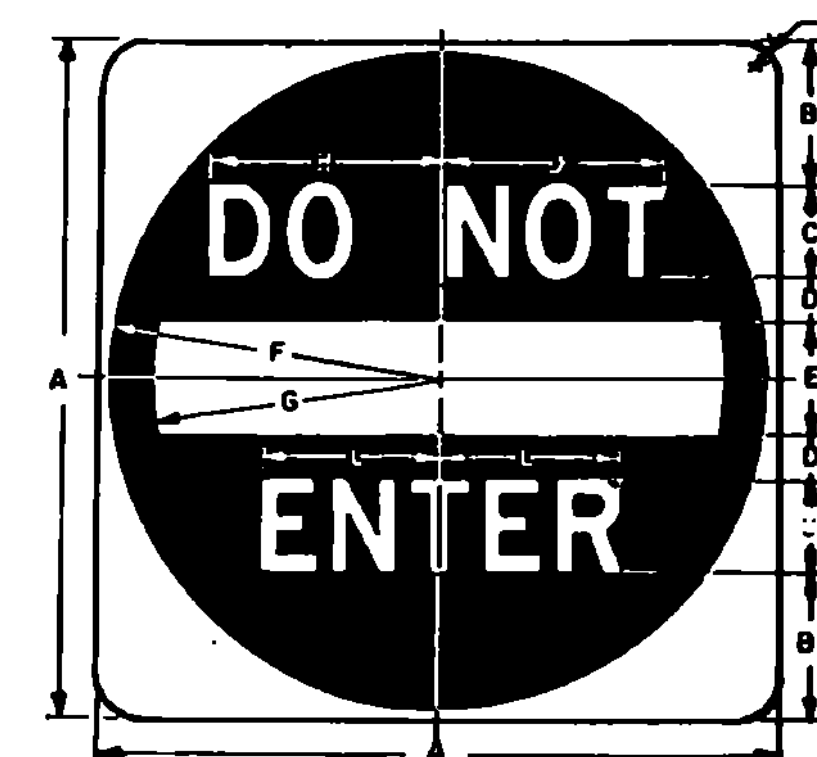


COLORS & DIMENSIONS APPLY TO BOTH SIGNS



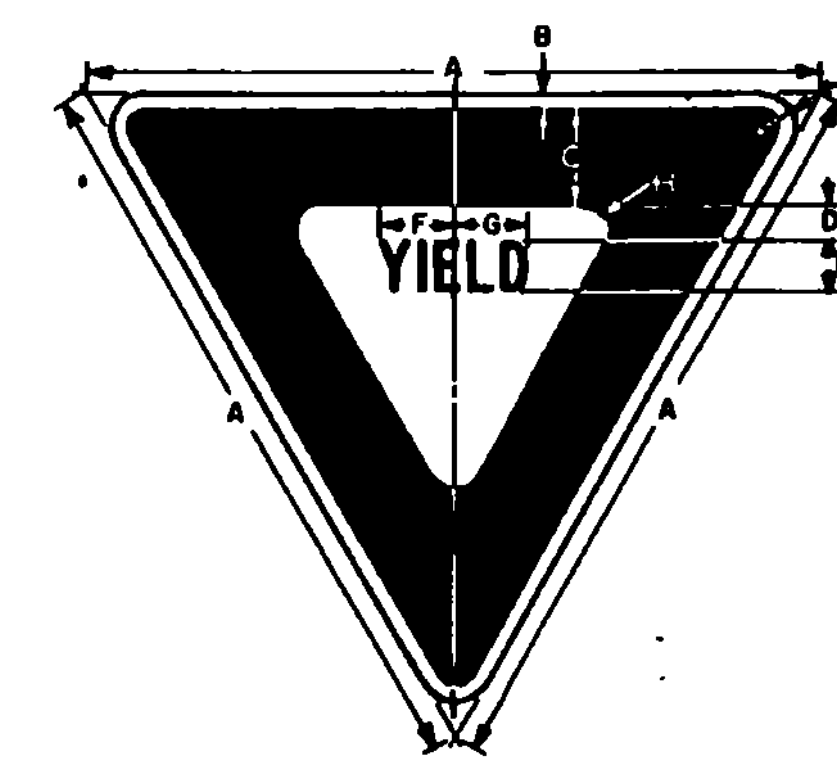
COLORS  
CIRCLE & DIAGONAL - RED (REFL)  
ARROW & BORDER - BLACK (NON-REFL)  
BACKGROUND - WHITE (REFL)

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	11-1/2	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.

FLAT SHEET ALUMINUM	12" X 12"	24" V	36" V	48" V
HIGH DENSITY OVERLAID PLYWOOD	18" X 18"	24" X 24"	30" X 18"	36" X 24"
GALVANIZED FLAT SHEET STEEL	0.060"	30" X 30"	36" X 36"	48" X 48"
	1/2"	1/2"	5/8"	5/8"
	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

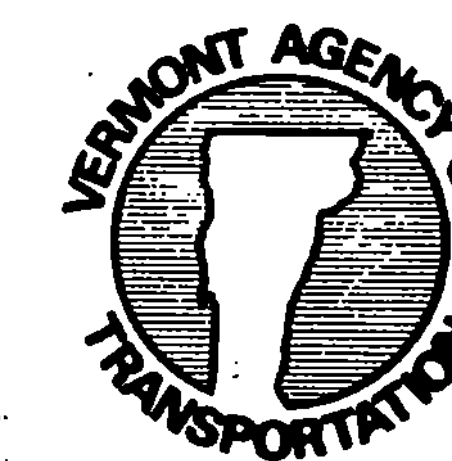
APPROVED

DATE JULY 18, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

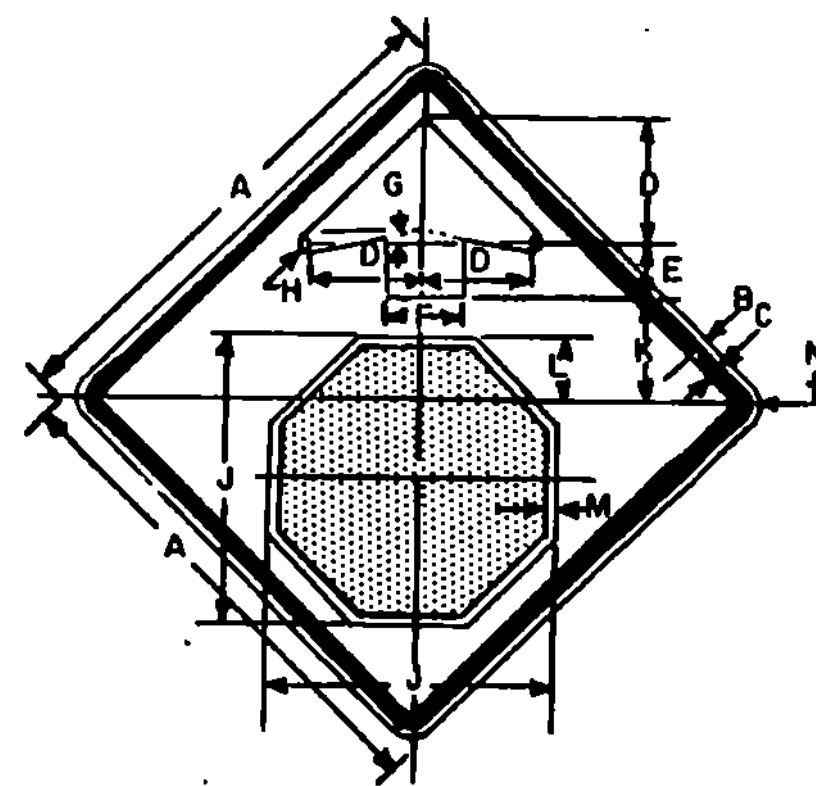
*Arthur J. Gosa*  
CHIEF OF DESIGN  
*Paul Egan*  
SURVEY AND PLANS ENGINEER

**REGULATORY SIGNS**



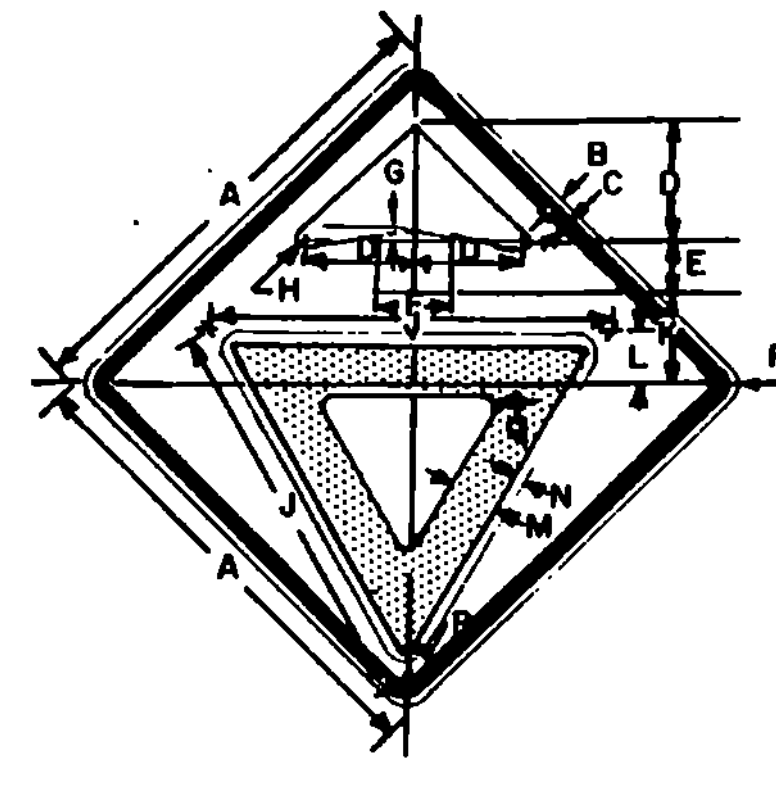
**STANDARD**

**E-15C**



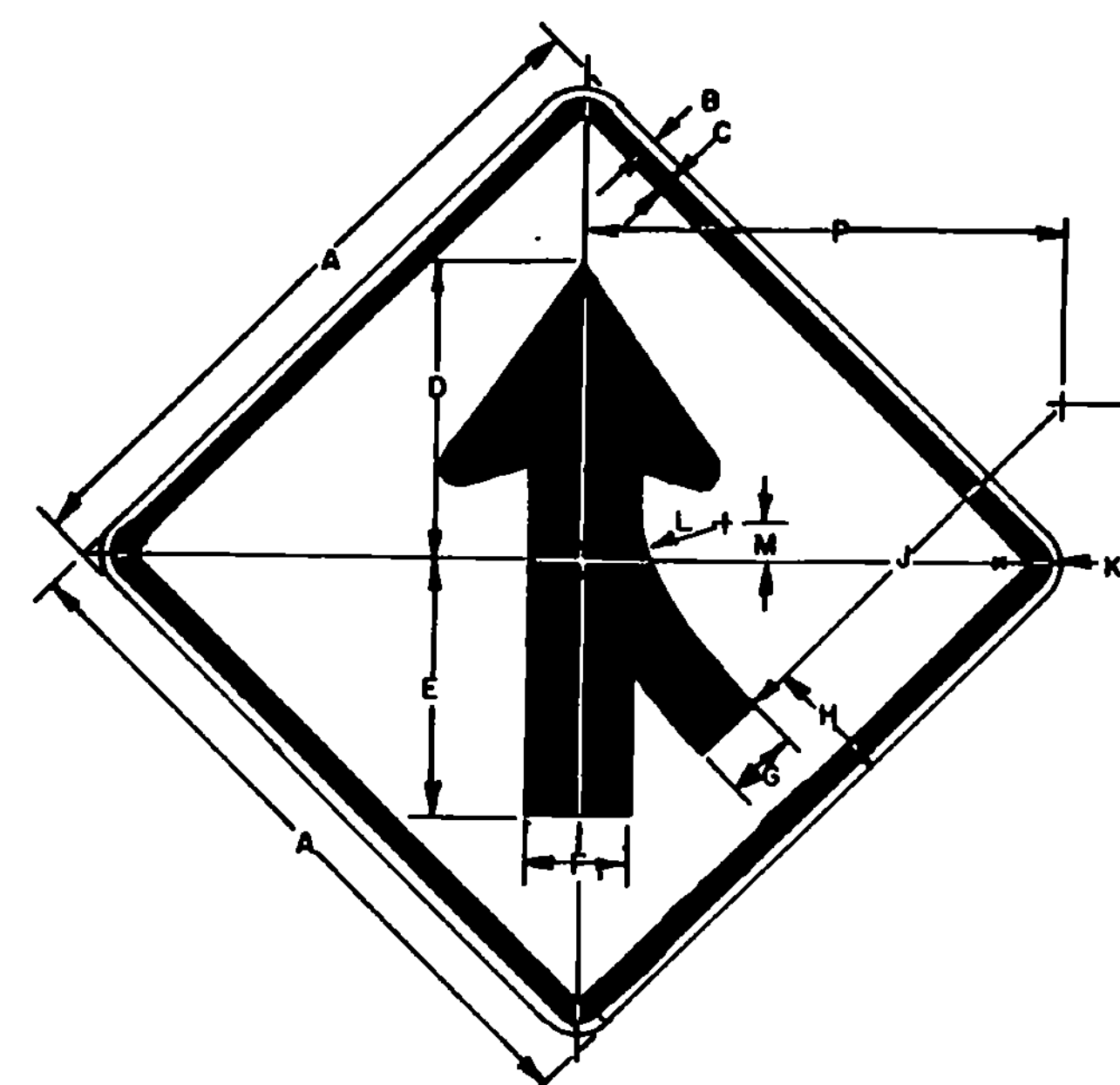
COLORS  
 BORDER AND ARROW - BLACK (NON-REFL)  
 SYMBOL - WHITE BORDER ON RED BACKGROUND (REFL)  
 BACKGROUND - YELLOW (REFL)

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	2-3/4	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)

SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
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
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
SPECIAL	48	3/4	1-1/4	12	6	8	1	1/2	38	10	4-1/2	5	3/4	1-7/8



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
FWY.	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.

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

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

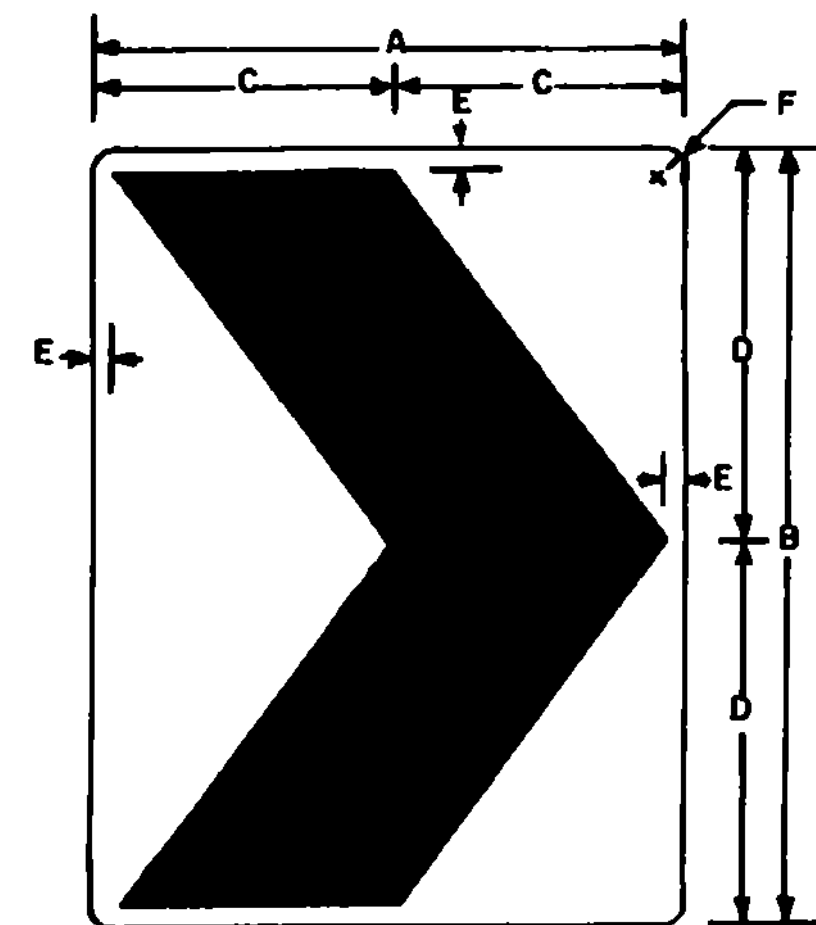
THE BLACK PORTIONS OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

SPECIFICATIONS

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

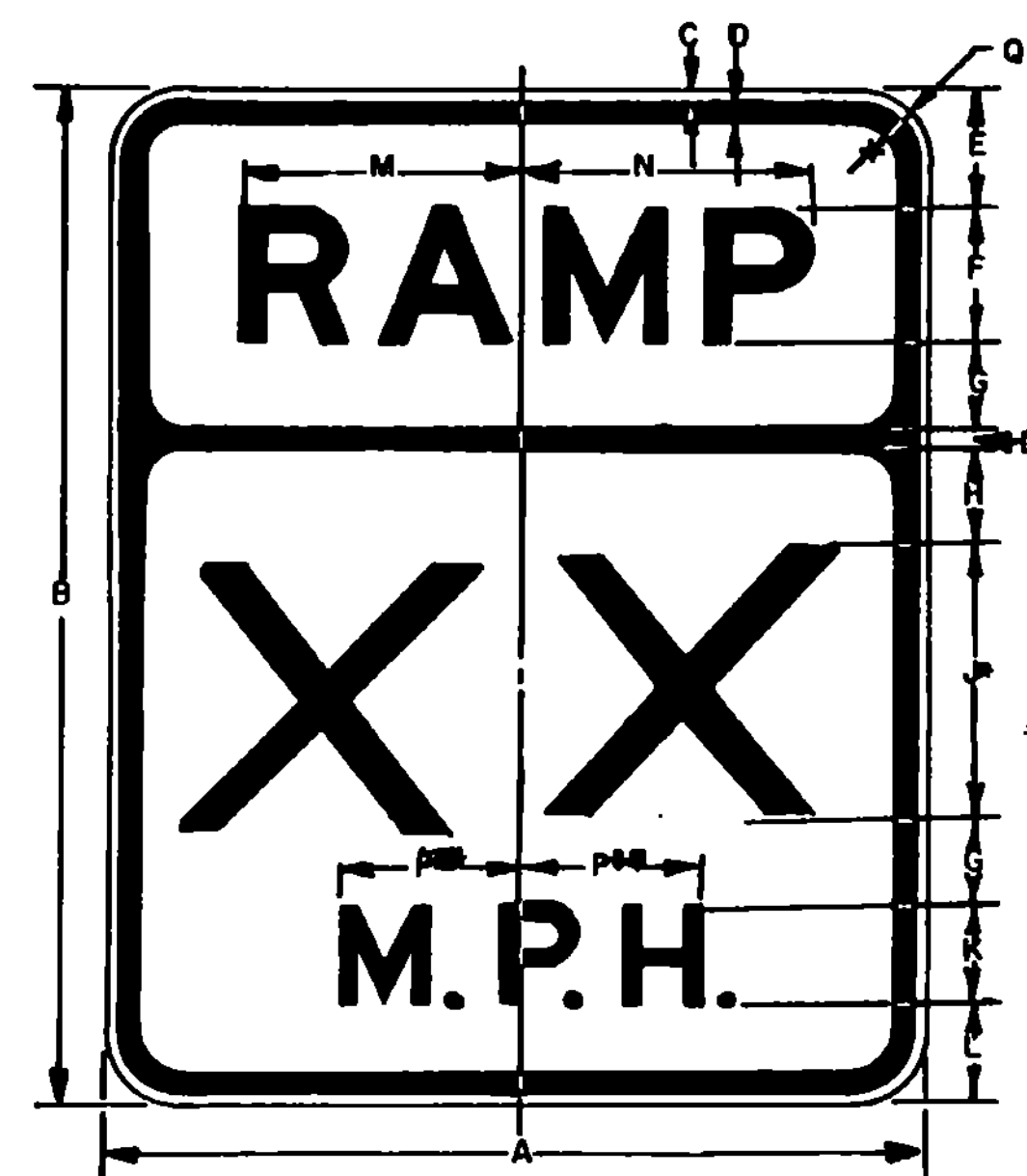
TEXT DESIGN

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.



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



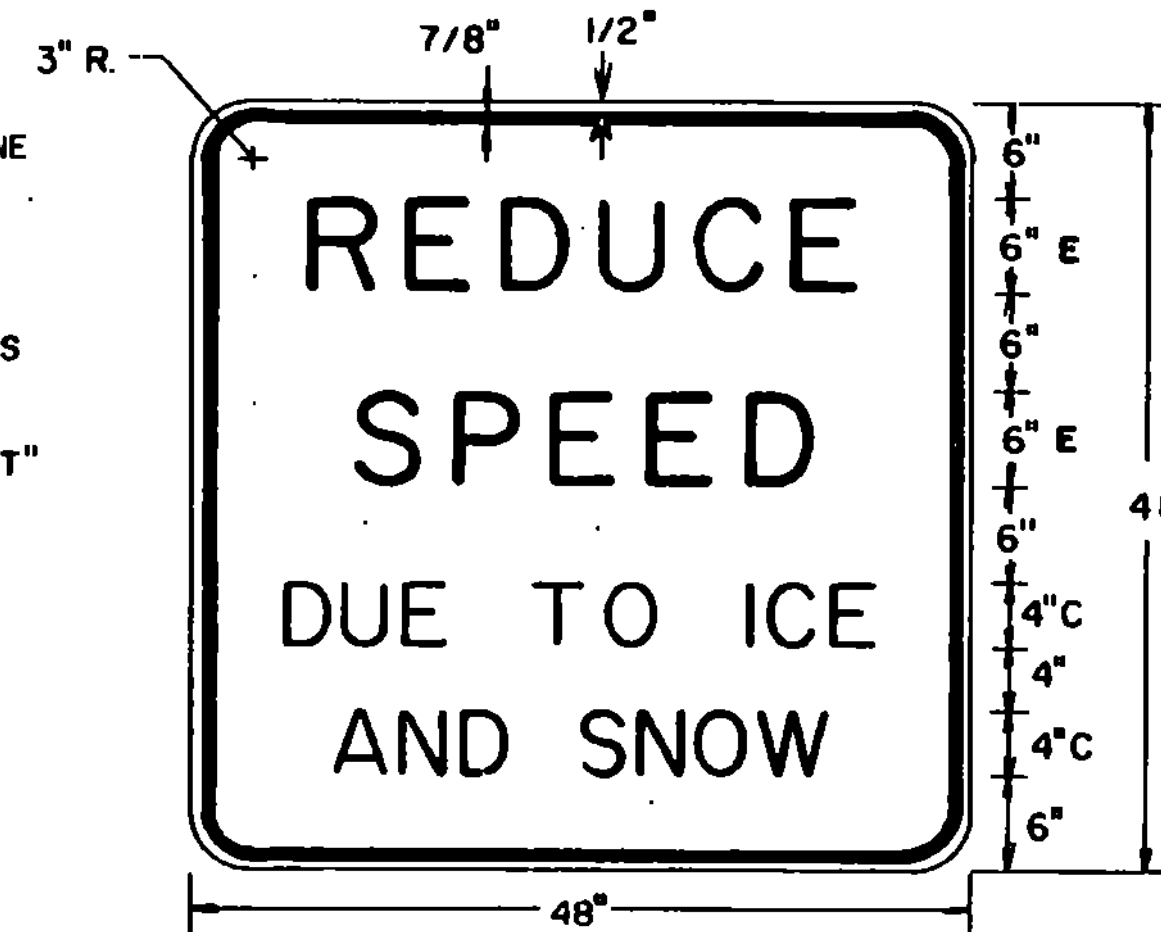
OR "EXIT"

\* 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	5-5/16
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
FWY.	48	60	3/4	1-1/4	7	8E	5	5-3/4	16E	6E	8	16-1/2	17	10-5/8



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

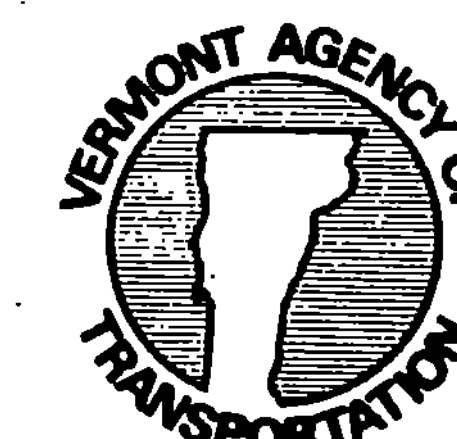
REVISIONS AND CORRECTIONS

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

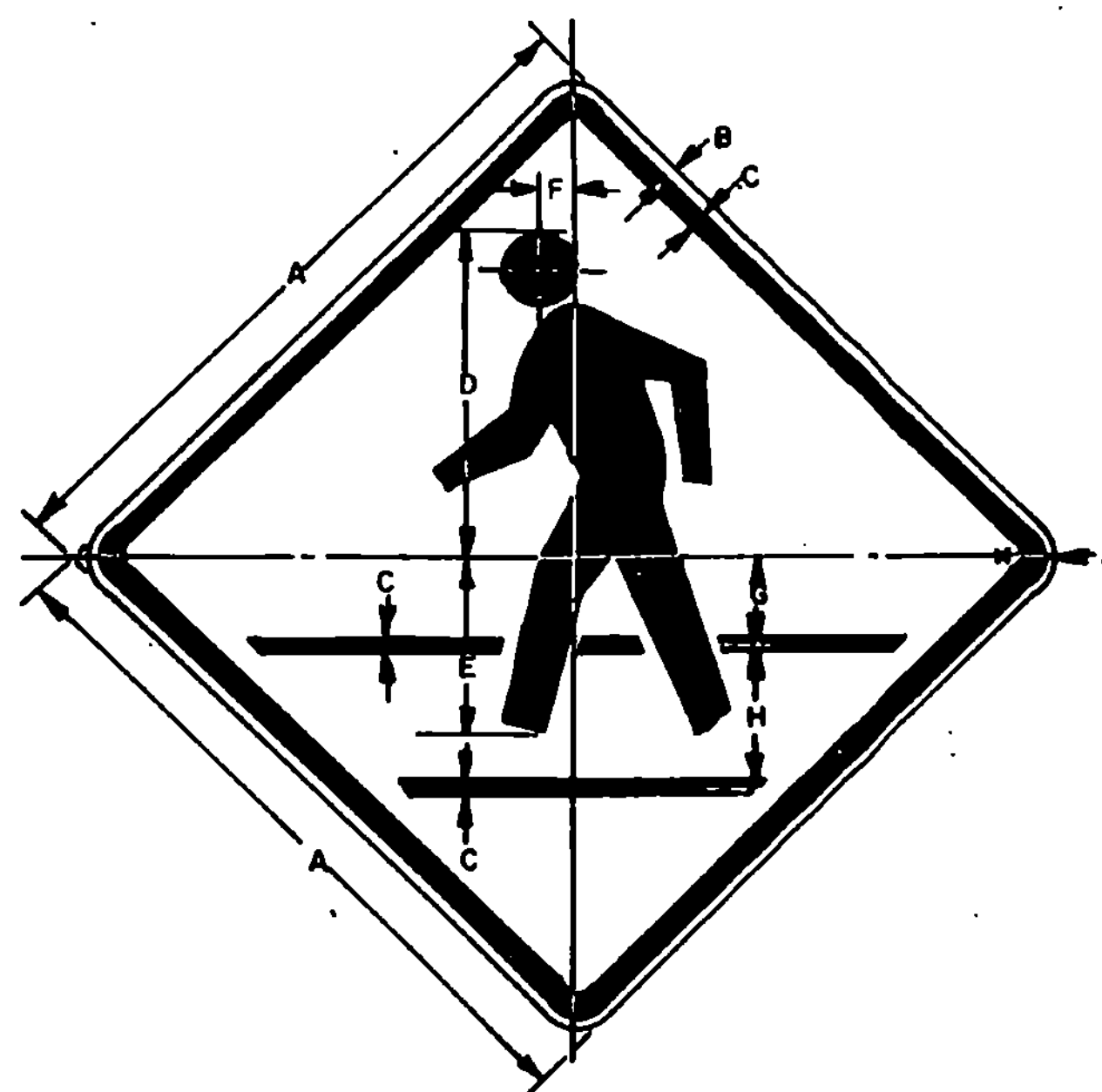
APPROVED

DATE OCT. 3, 1984  
 \_\_\_\_\_  
 DIRECTOR OF ENGINEERING AND CONSTRUCTION  
 \_\_\_\_\_  
 CHIEF OF DESIGN  
 \_\_\_\_\_  
 SURVEY AND PLANS ENGINEER

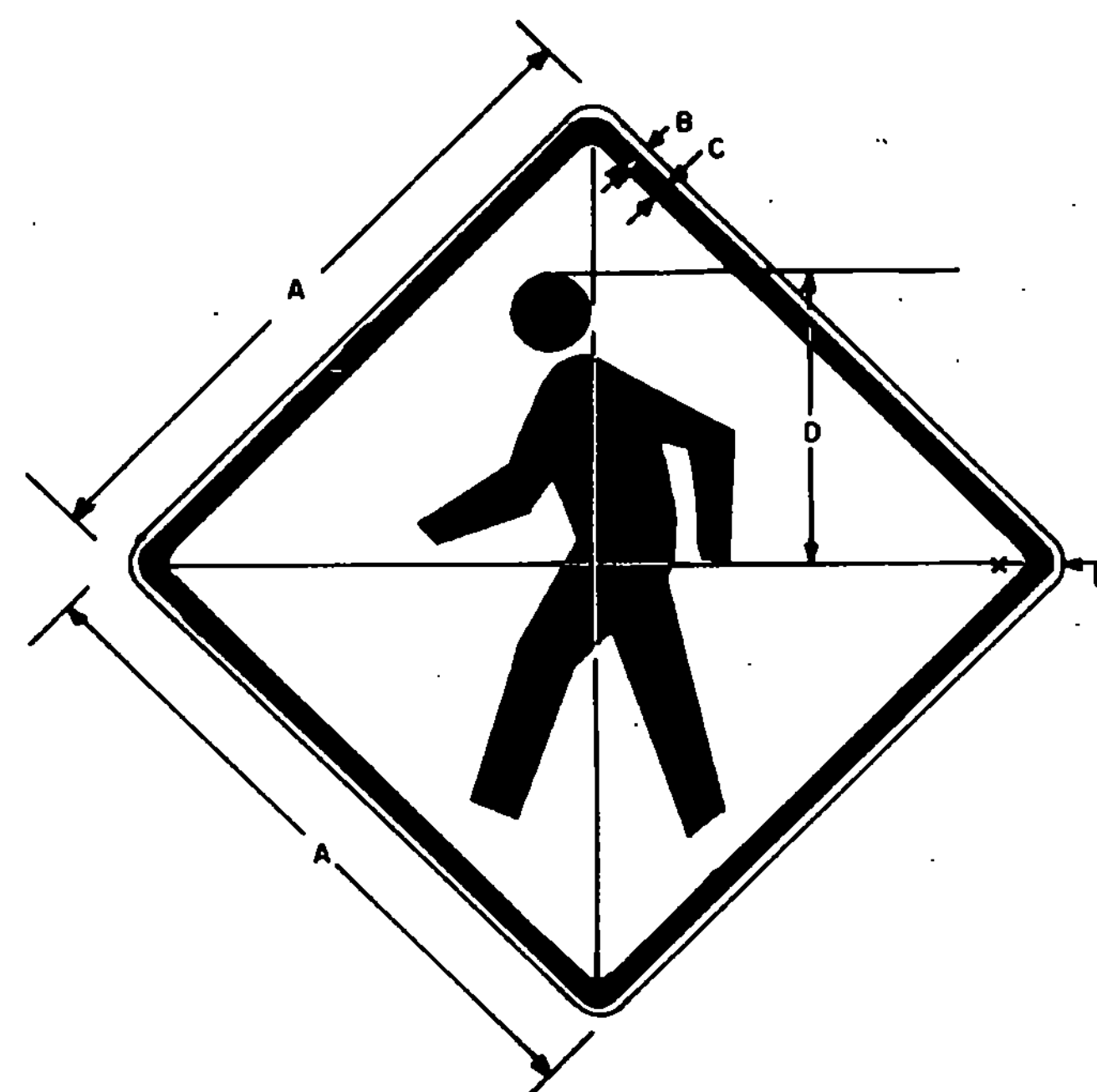
WARNING SIGNS



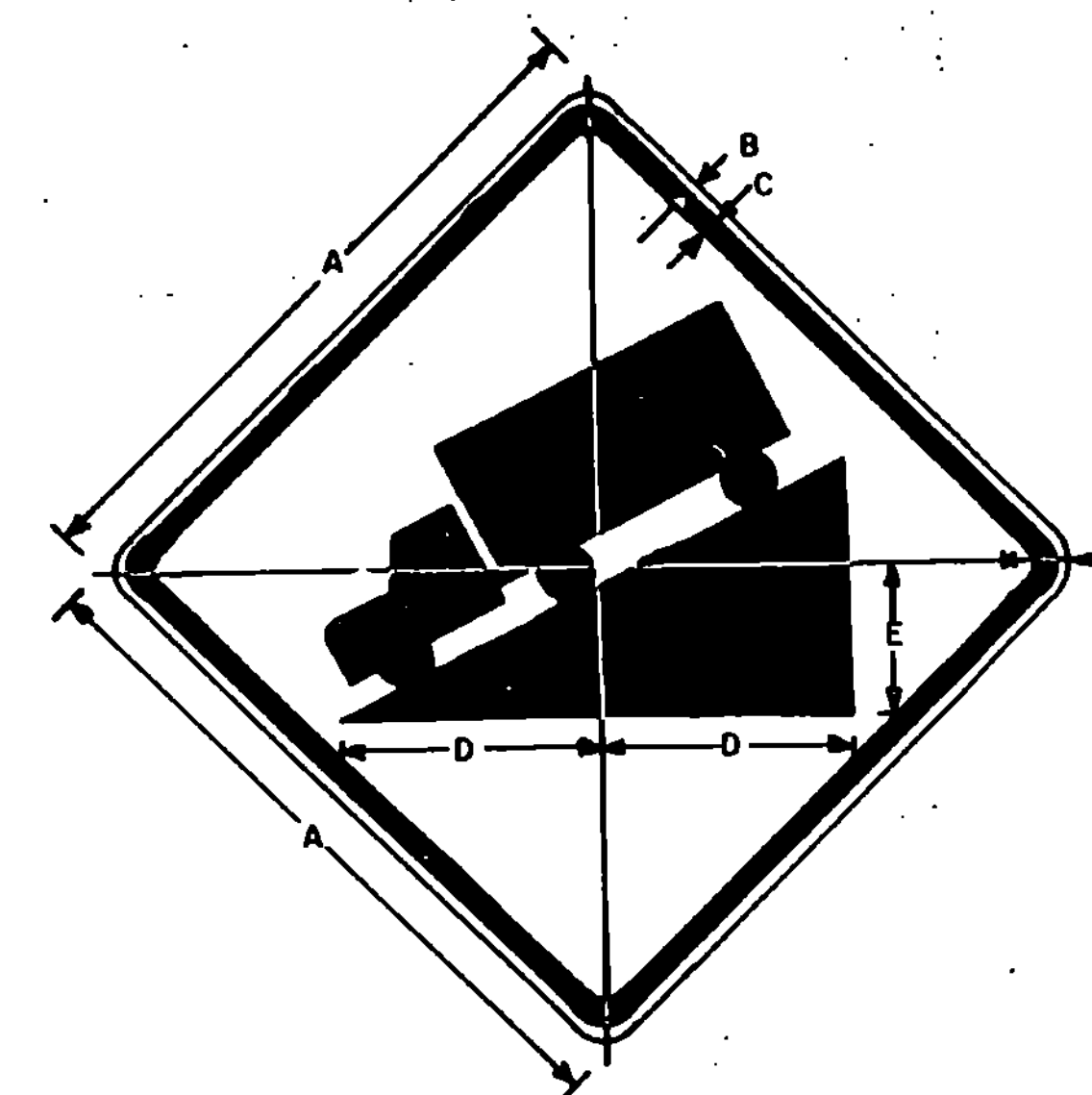
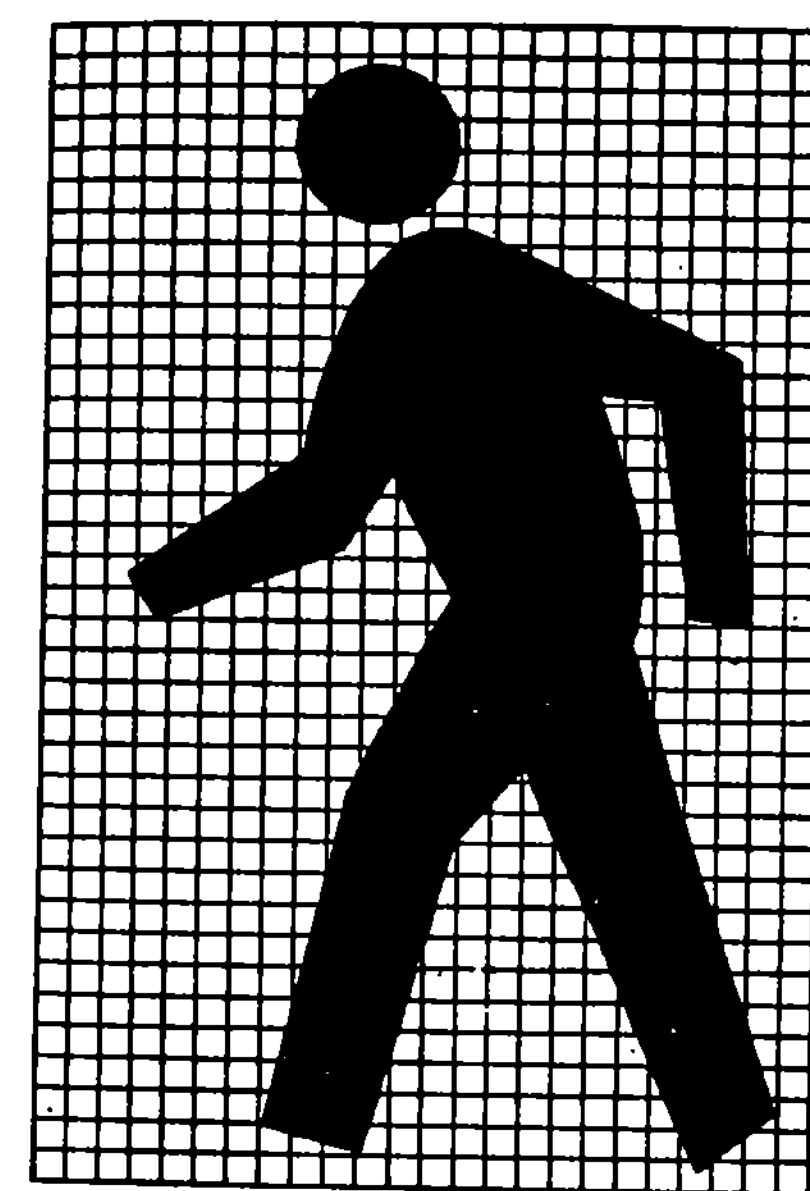
STANDARD  
 E-19



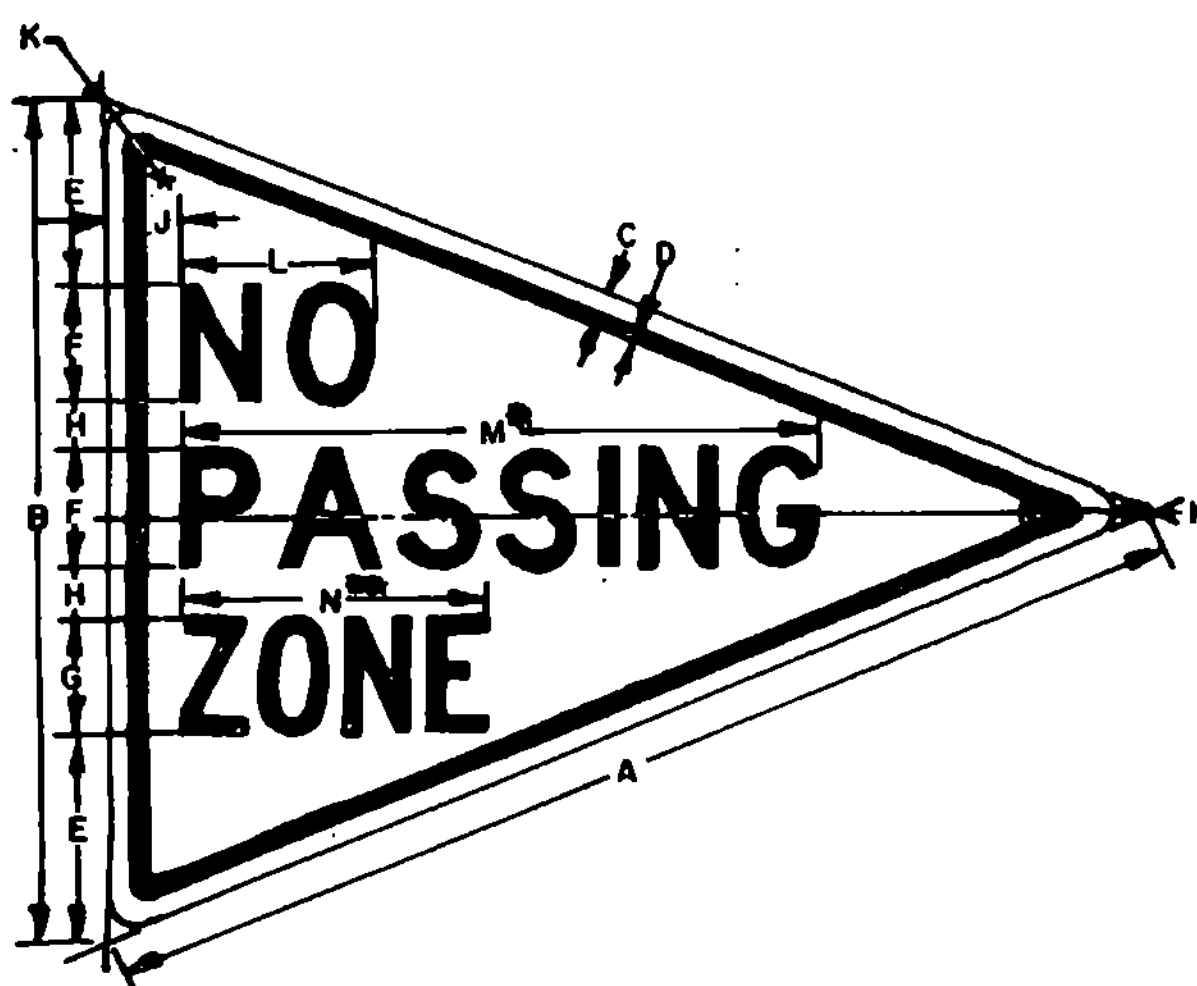
SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
BIKE	18	3/8	5/8	8-3/8	4-3/4	3/4	2-3/8	3-5/8	1-1/2	
MIN.	24	3/8	5/8	11	6-3/8	1-3/16	3-1/8	4-3/4	1-1/2	
STD.	30	1/2	3/4	14	8	1-1/2	4	6	1-7/8	
EXPWY.	36	5/8	7/8	16-3/4	9-5/8	1-13/16	4-3/4	7-1/4	2-1/4	
SPECIAL	48	3/4	1-1/4	22	12-3/4	2-3/8	6-1/4	9-1/2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

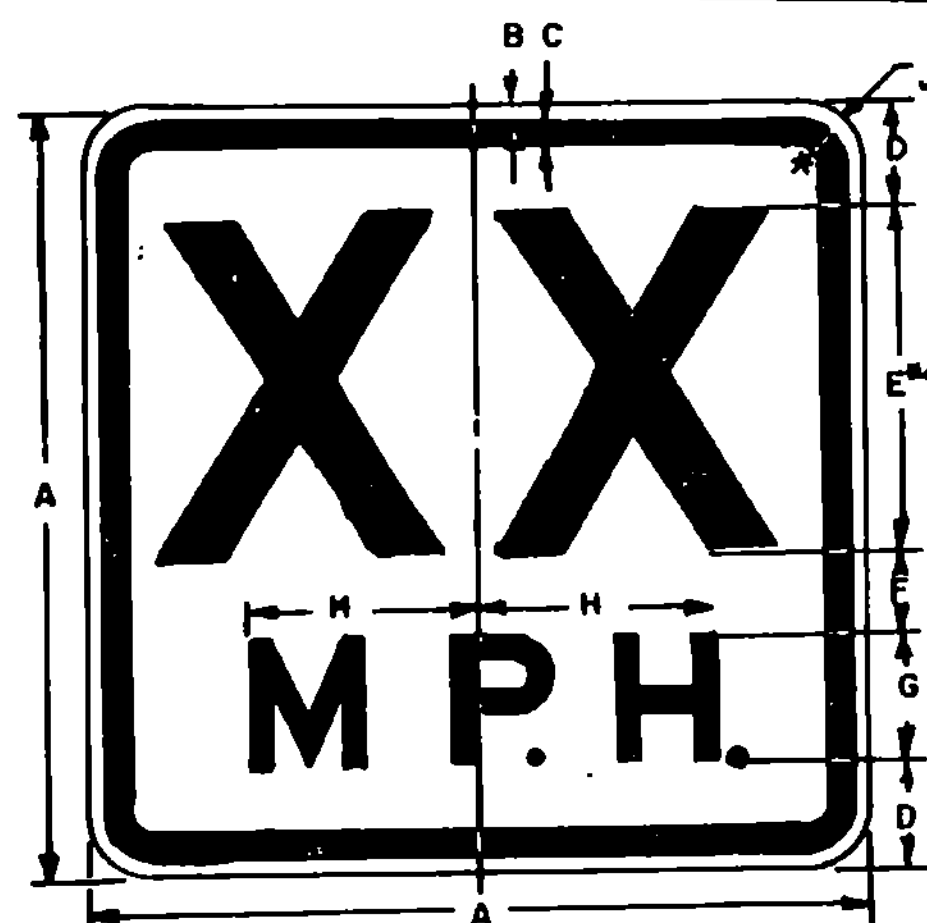


SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
MIN.	24	3/8	5/8	8-3/4	6	1-1/2
STD.	30	1/2	3/4	11	7-1/2	1-7/8
EXPWY.	36	5/8	7/8	13-1/4	9	2-1/4
FWY	48	3/4	1-1/4	17-1/2	12	3



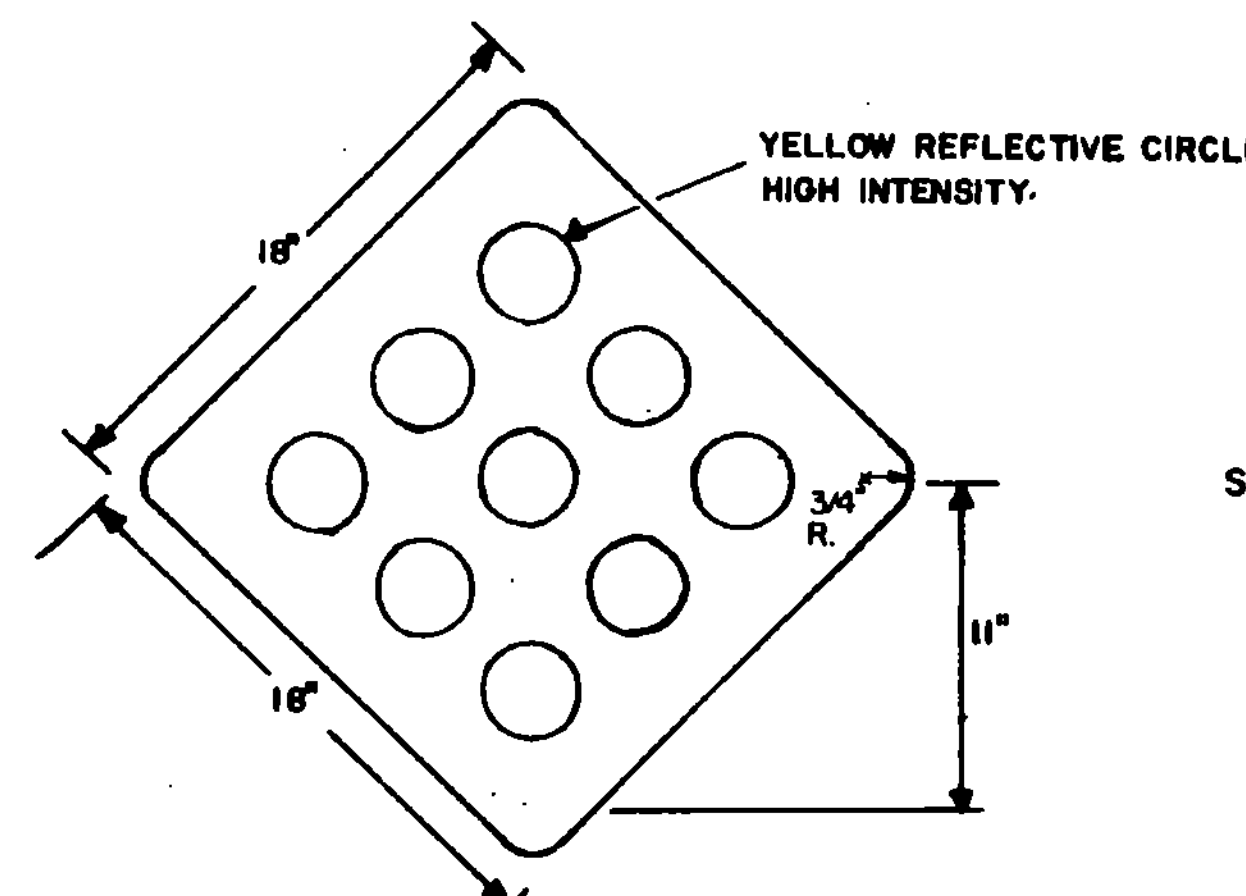
SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
MIN.	40	30	1/2	3/4	7-1/4	4D	4C	1-3/4	2-1/2	1-7/8	6-1/2	22-9/16	11-1/16
STD.	48	36	5/8	7/8	8-1/2	5D	5C	2	3	2-1/4	8	28-13/16	12-3/4
SPECIAL	64	48	3/4	1-1/4	12	6D	6C	3	4	3	10-3/4	33-11/16	16-9/16

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

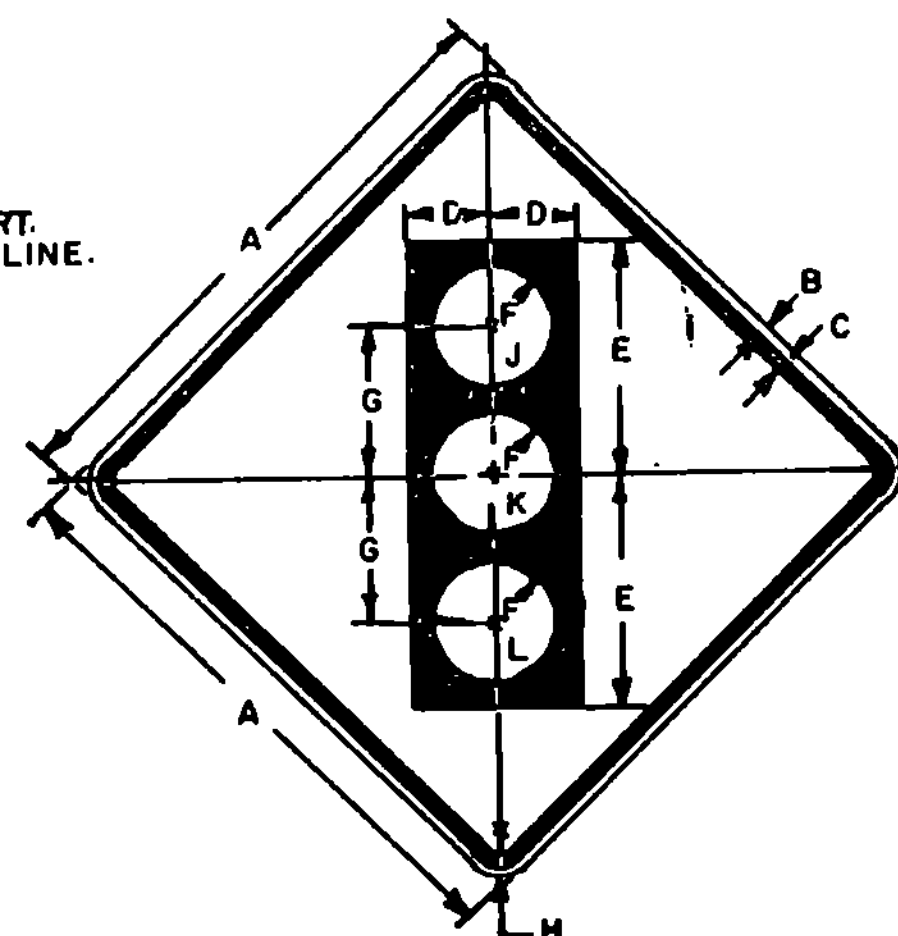


\*\* OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.

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	



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 3" 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	3-3/4	3-3/4	8-3/4	1-7/8
STD. & MIN.	36	5/8	7/8	5-3/4	5-3/4	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 OVERLAP 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.

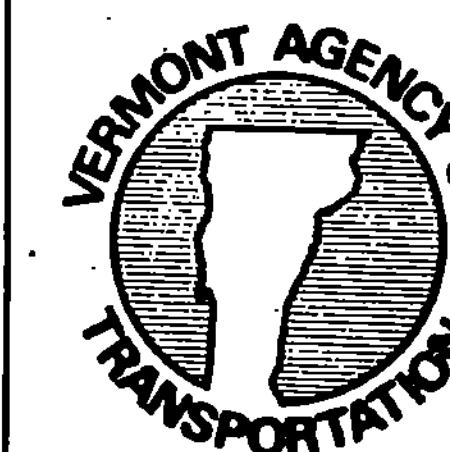
**TEXT DESIGN**  
 LETTERS, DIGITS, SYMBOLS, SPACINGS, AND TEXT DIMENSIONS SHALL CONFORM WITH THE STANDARD ALPHABETS AND DESIGNS PRESCRIBED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES PREPARED BY THE NATIONAL JOINT COMMITTEE ON UNIFORM TRAFFIC CONTROL DEVICES.

**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

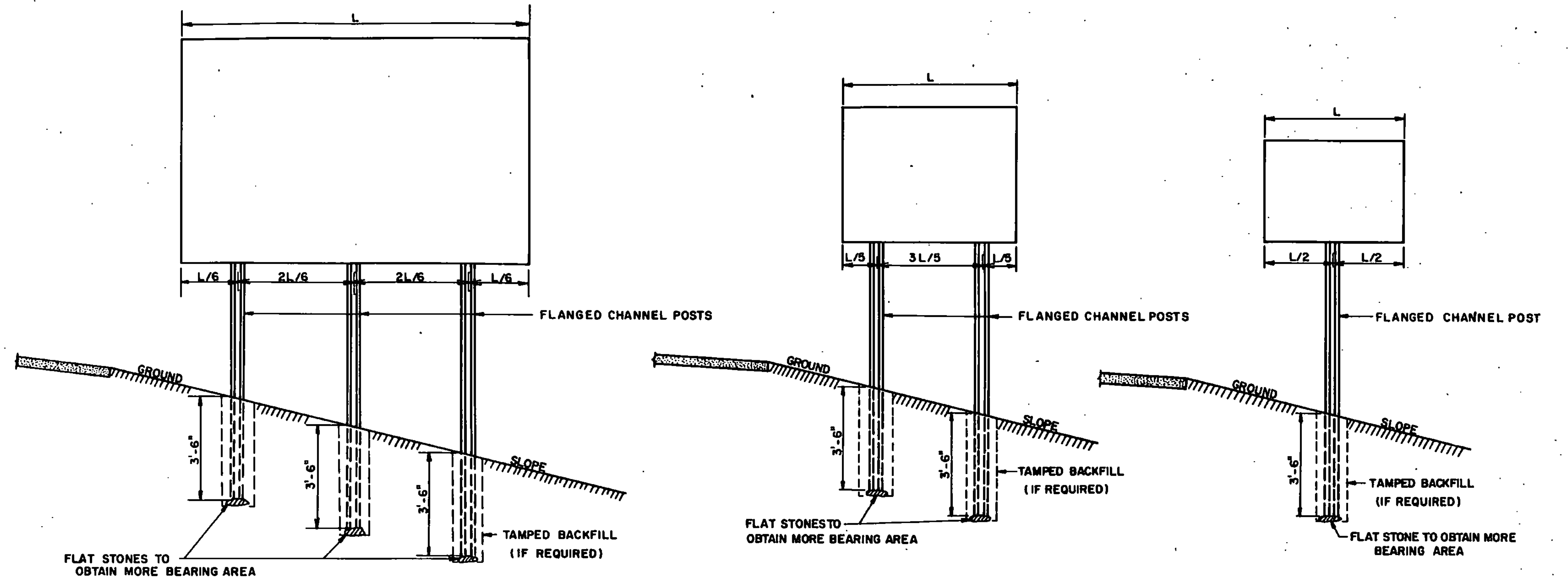


## STANDARD E-19B

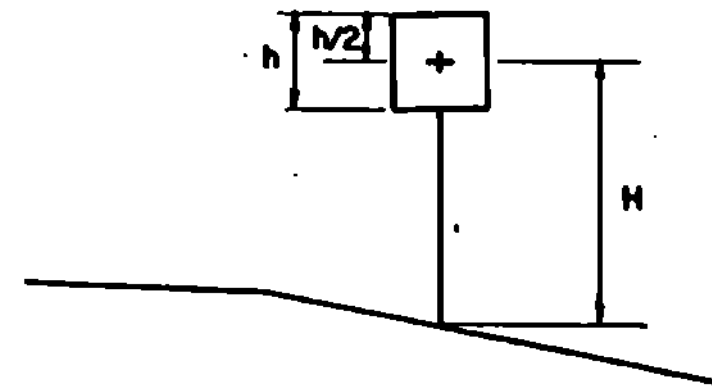
GENERAL NOTES

ALL MATERIAL SHALL BE AS SPECIFIED UNDER SECTION 675 - 675 - 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.



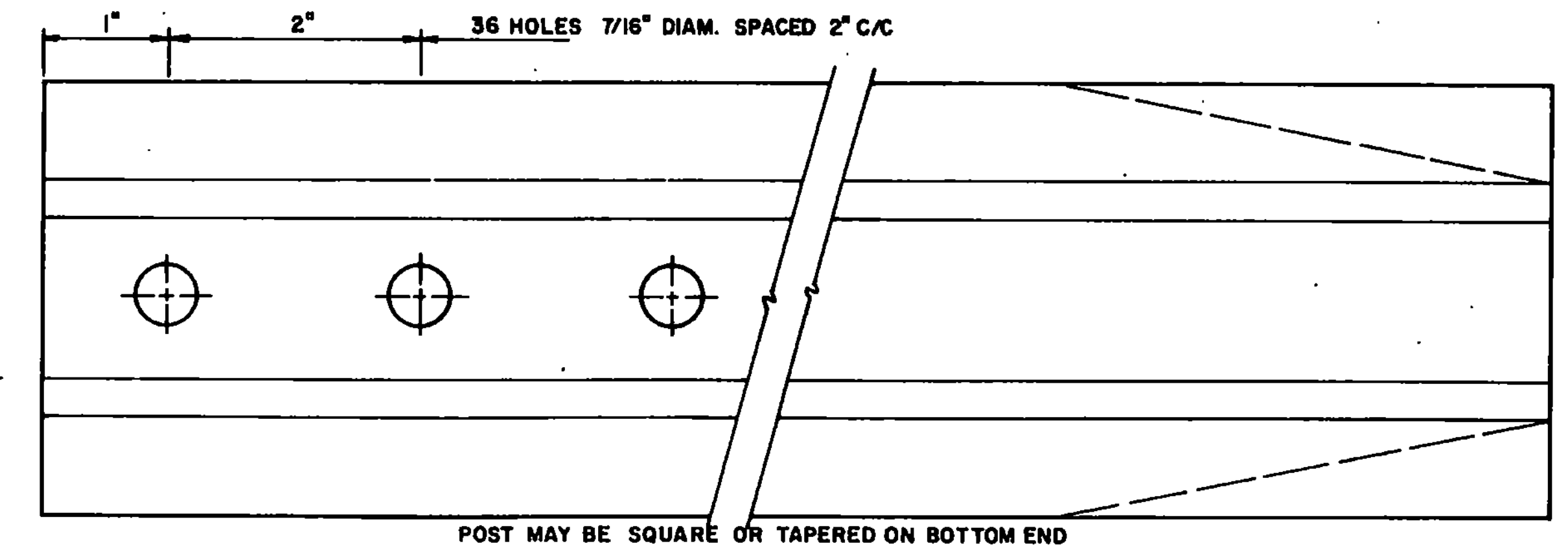
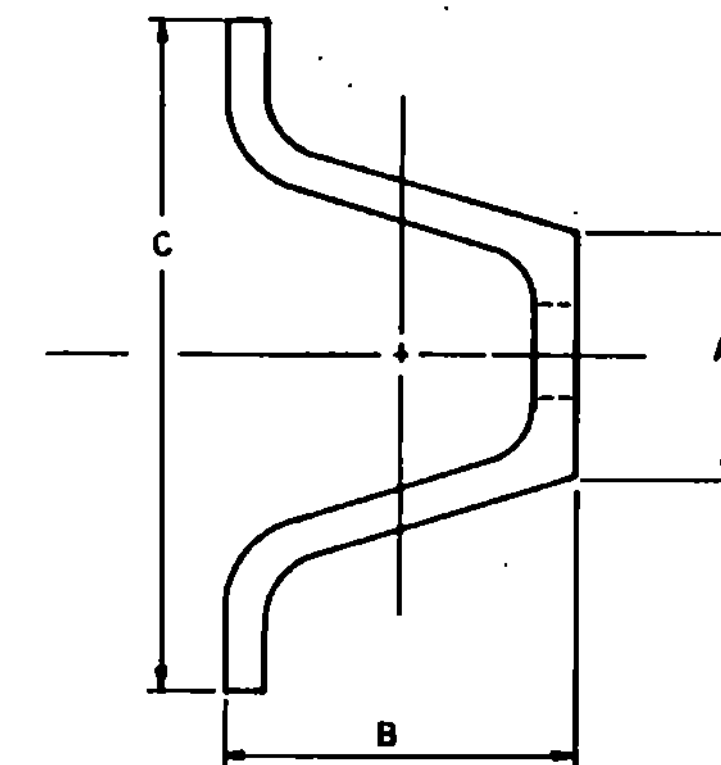
IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED STEEL POSTS WILL BE SET AND GROUTED 12" DEEP IN THE LEDGE.



POST SELECTION CHART		
SIGN AREA (FT <sup>2</sup> ) 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)0.55Fy
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. <sup>3</sup>
2 1/2	1 9/32"	1 35/64"	3 1/16"	0.40 IN. <sup>3</sup>
3	1 5/16"	1 7/8"	3 1/2"	0.93 IN. <sup>3</sup>

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

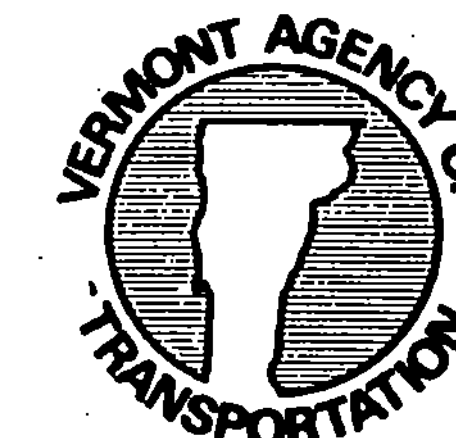


REVISIONS AND CORRECTIONS  
 FEB. 8, 1978 - HEIGHT OF SIGNS ADDED.  
 DEC. 15, 1978 - RAIL STEEL DELETED  
 JAN. 8, 1981 - ADDED POST SIZE & SELECTION CHARTS;  
 REVISED NOTES & DIMENSIONS  
 FEB. 3, 1986 - UPDATED TO 1986  
 SPECIFICATIONS

APPROVED

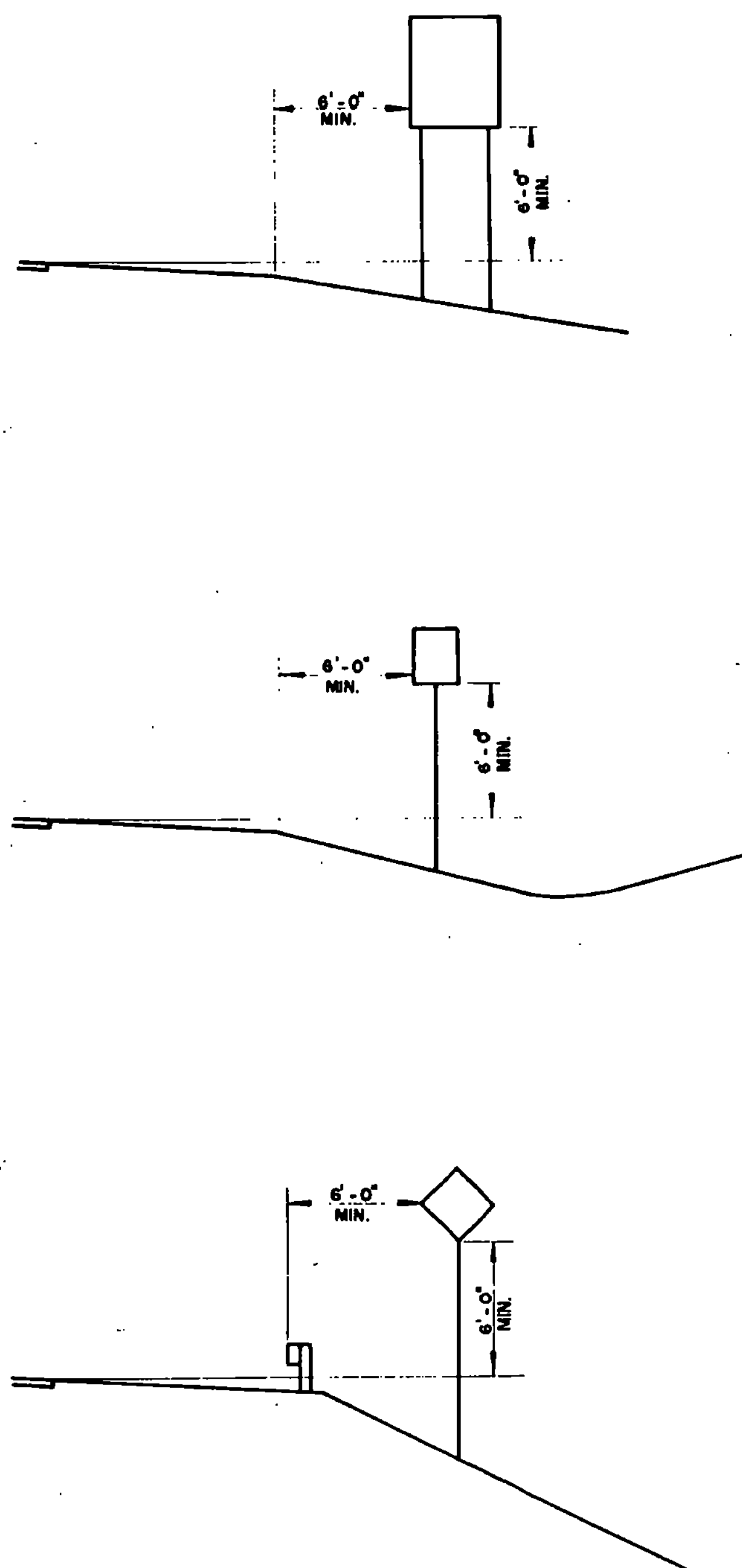
Nov 24, 1976  
 DATE  
*E. W. Stickney*  
 CHIEF ENGINEER  
*R. O. Munn*  
 ASST. CHIEF ENGINEER  
*Dean C. Jones*  
 HIGHWAY ENGINEER

# FLANGED CHANNEL STEEL SIGN SUPPORTS

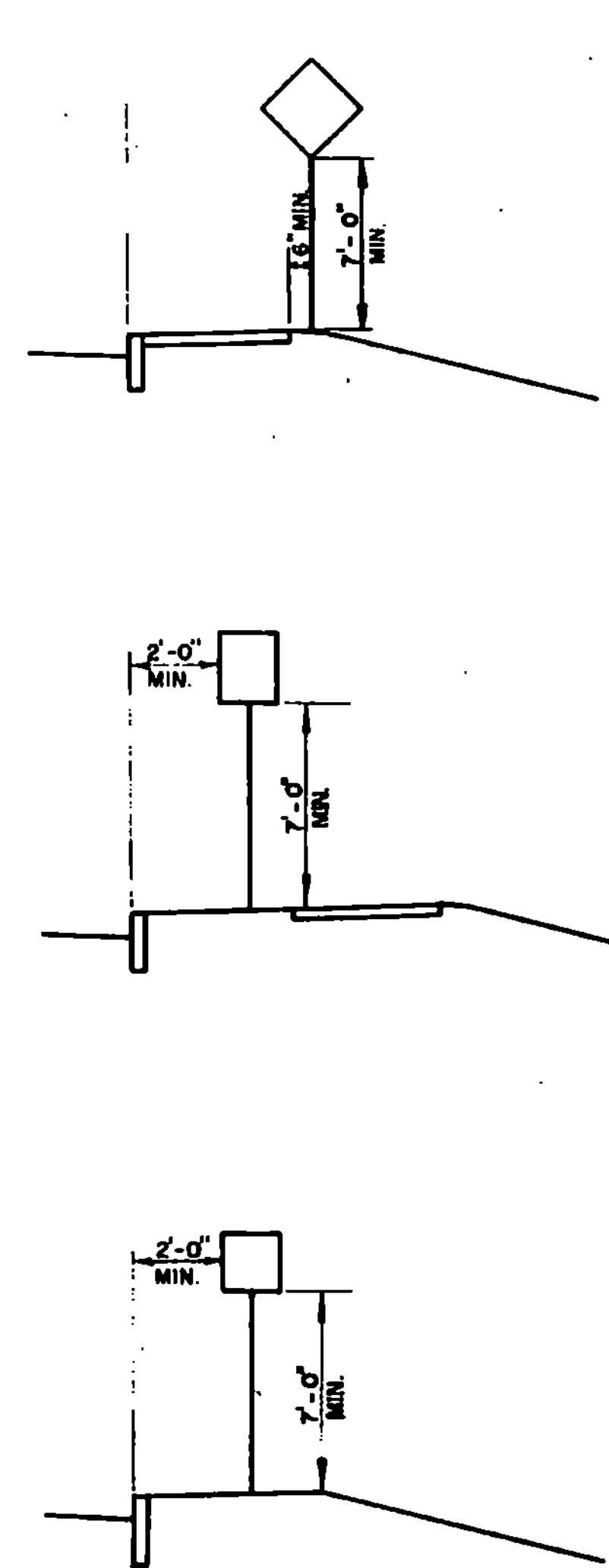


STANDARD  
E 24 - A

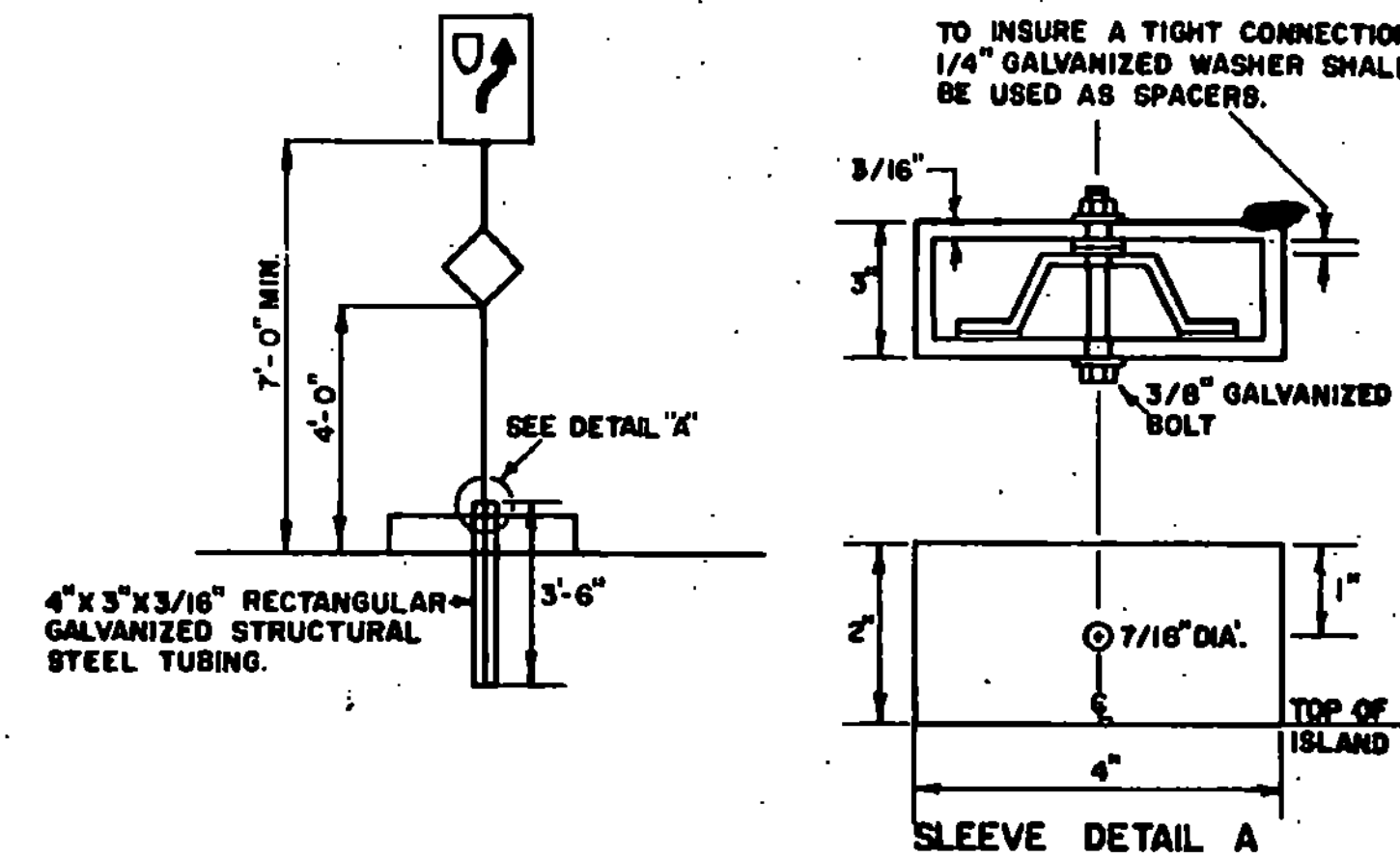
RURAL



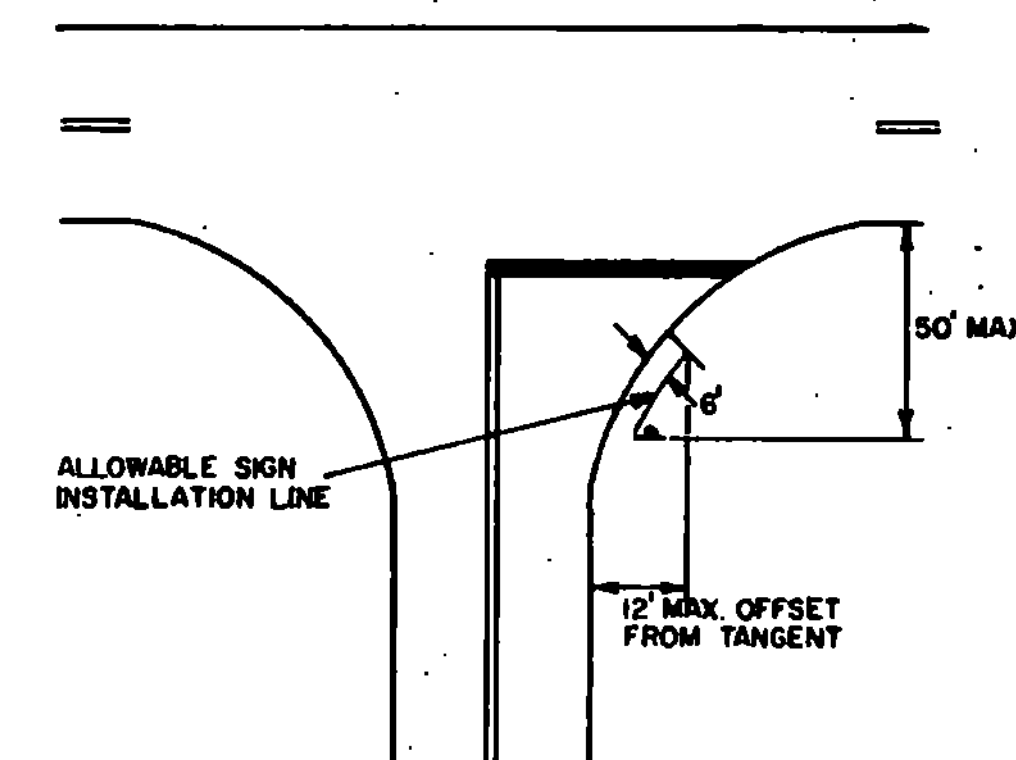
URBAN



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.

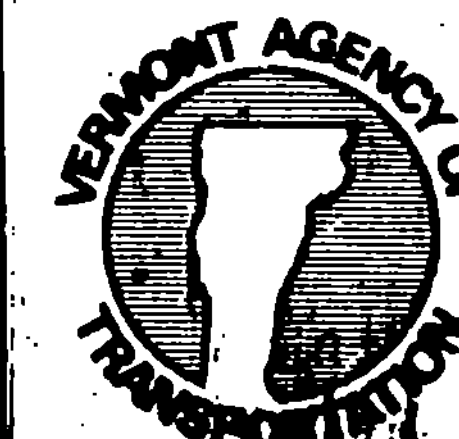
REVISIONS AND CORRECTIONS

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

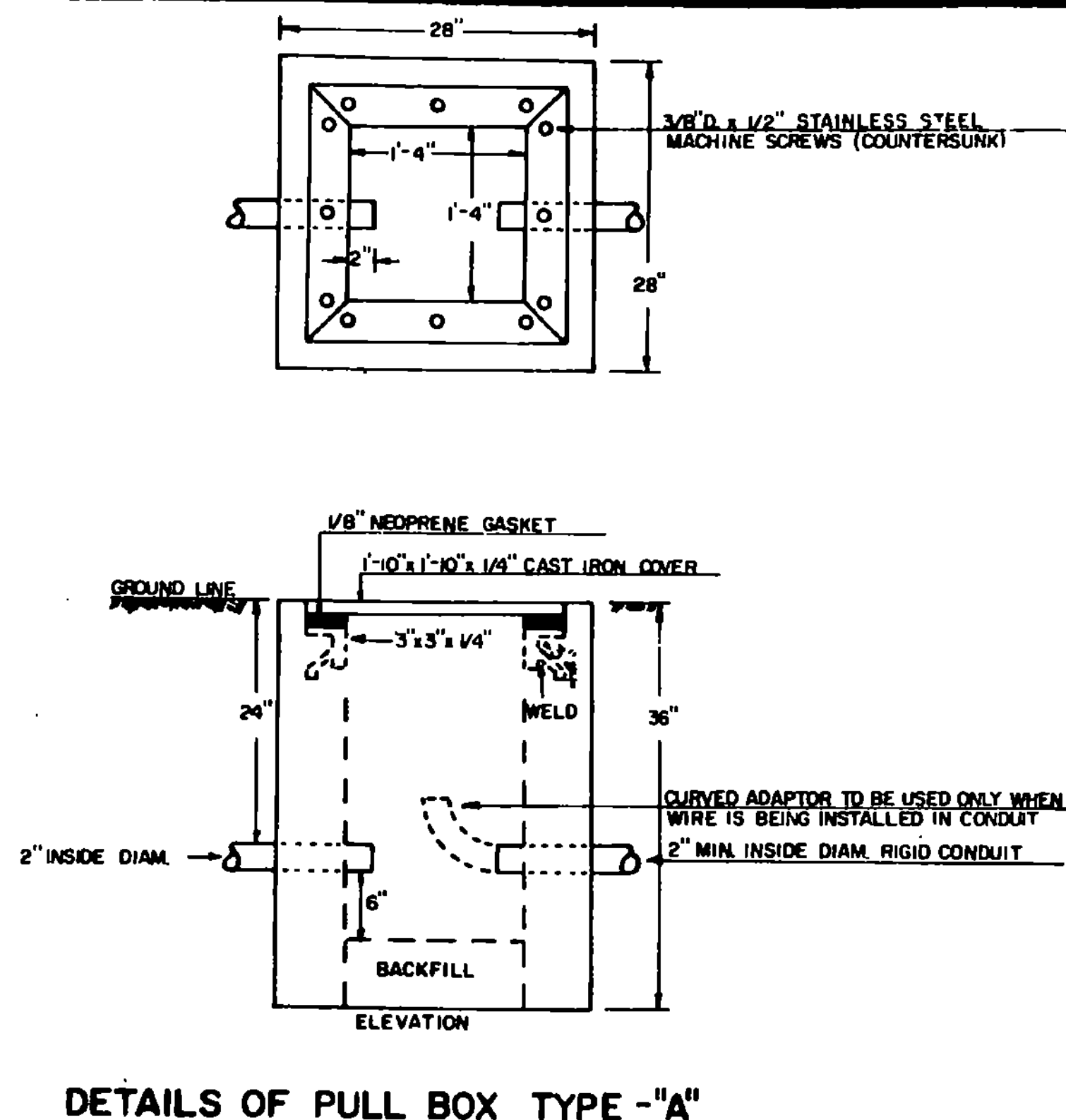
*R. W. Arnold*  
CHIEF ENGINEER  
*E. H. Stickney*  
ASST. CHIEF ENGINEER  
*G. M. Lane*  
HIGHWAY ENGINEER

STANDARD SIGN PLACEMENT  
CONVENTIONAL ROAD

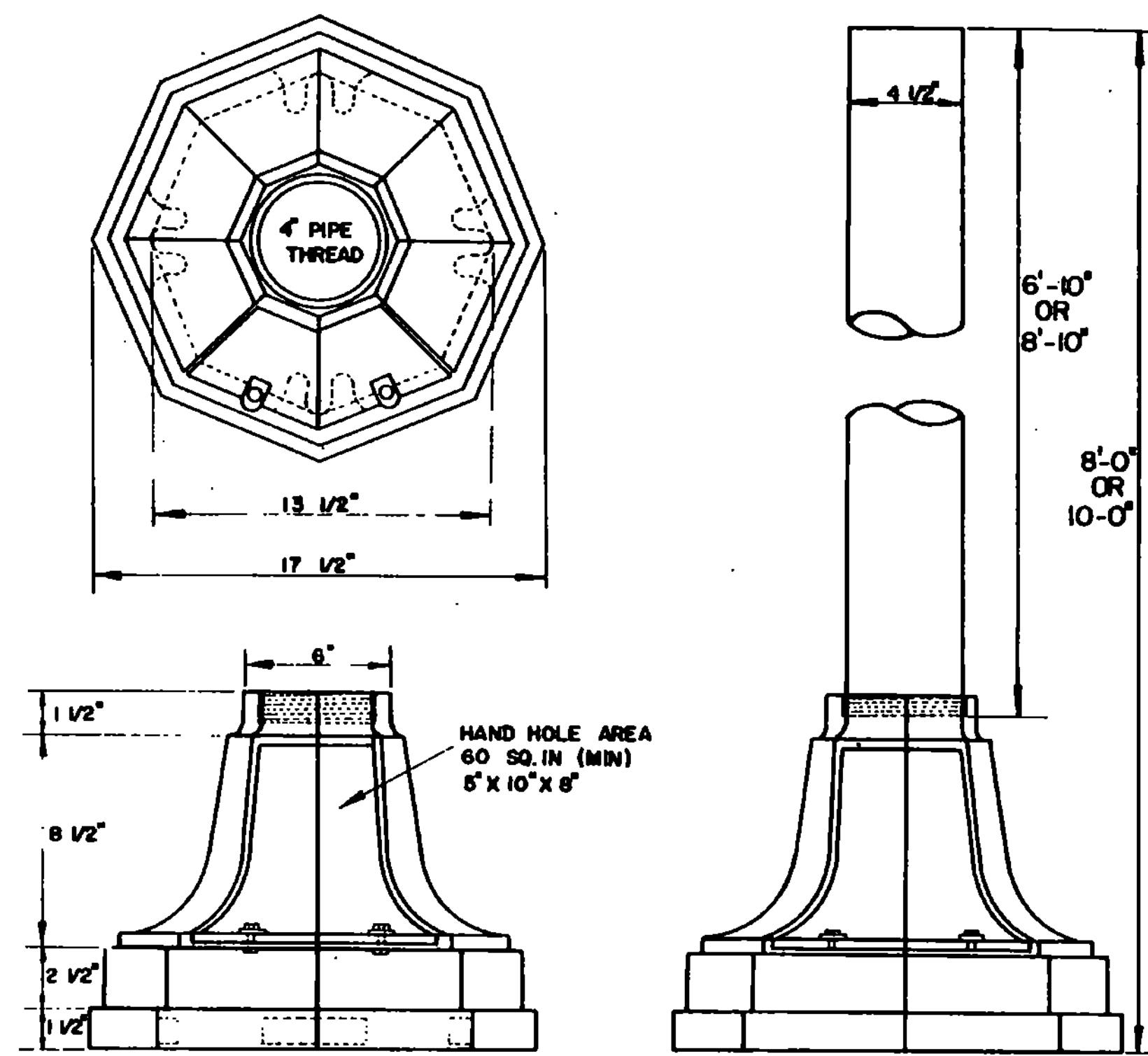


STANDARD

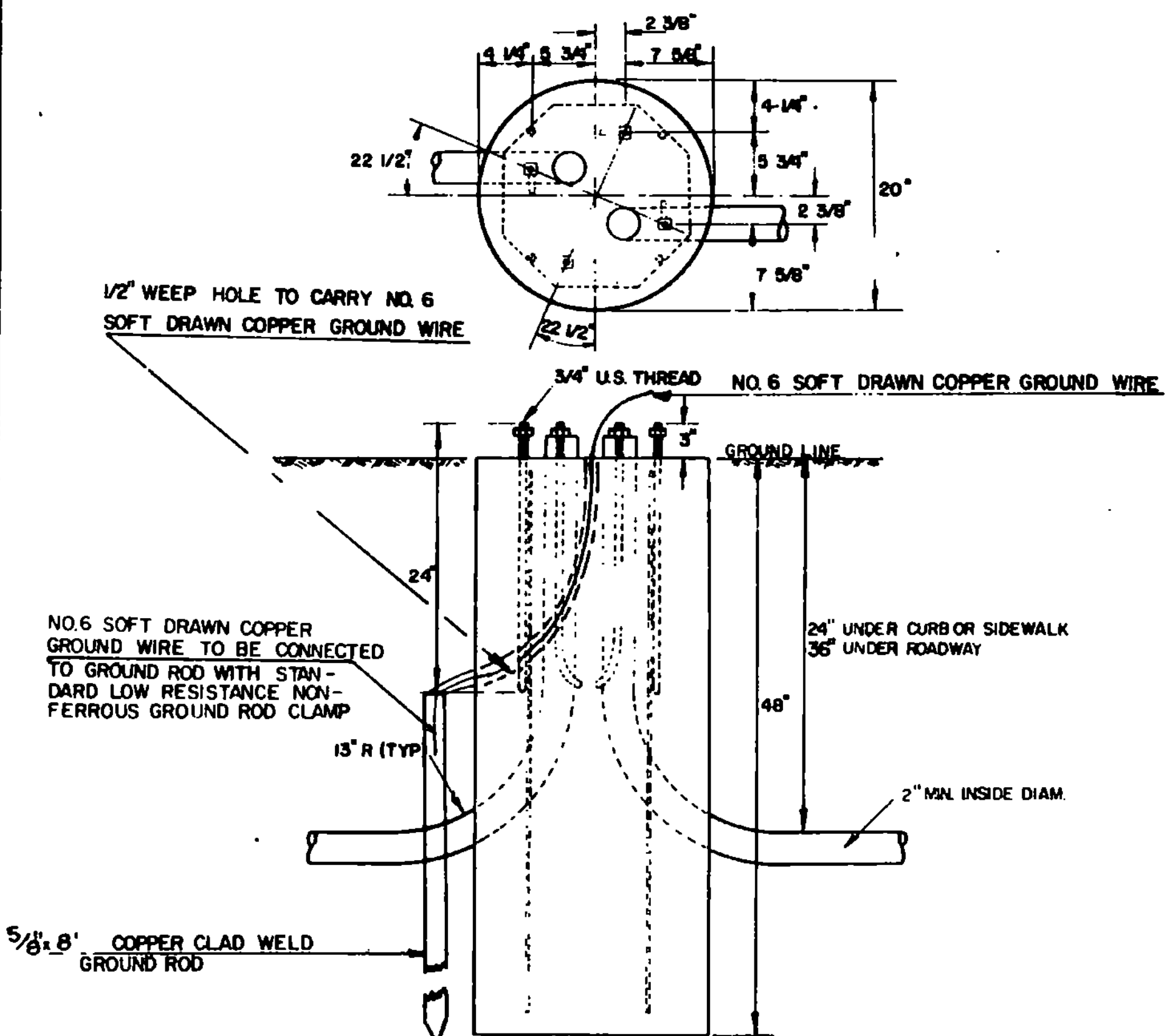
E-29



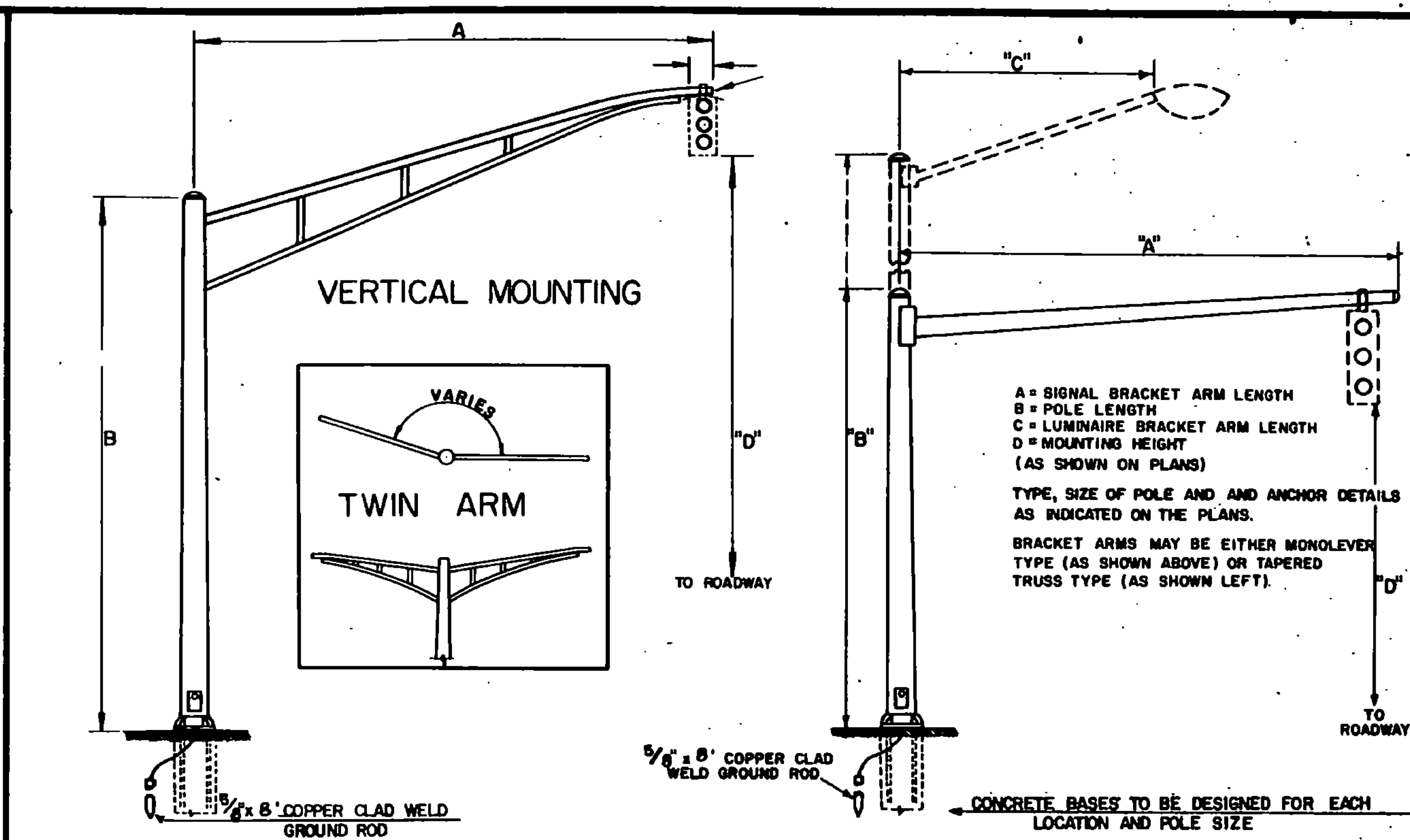
DETAILS OF TRAFFIC SIGNAL PEDESTAL POST & BASE



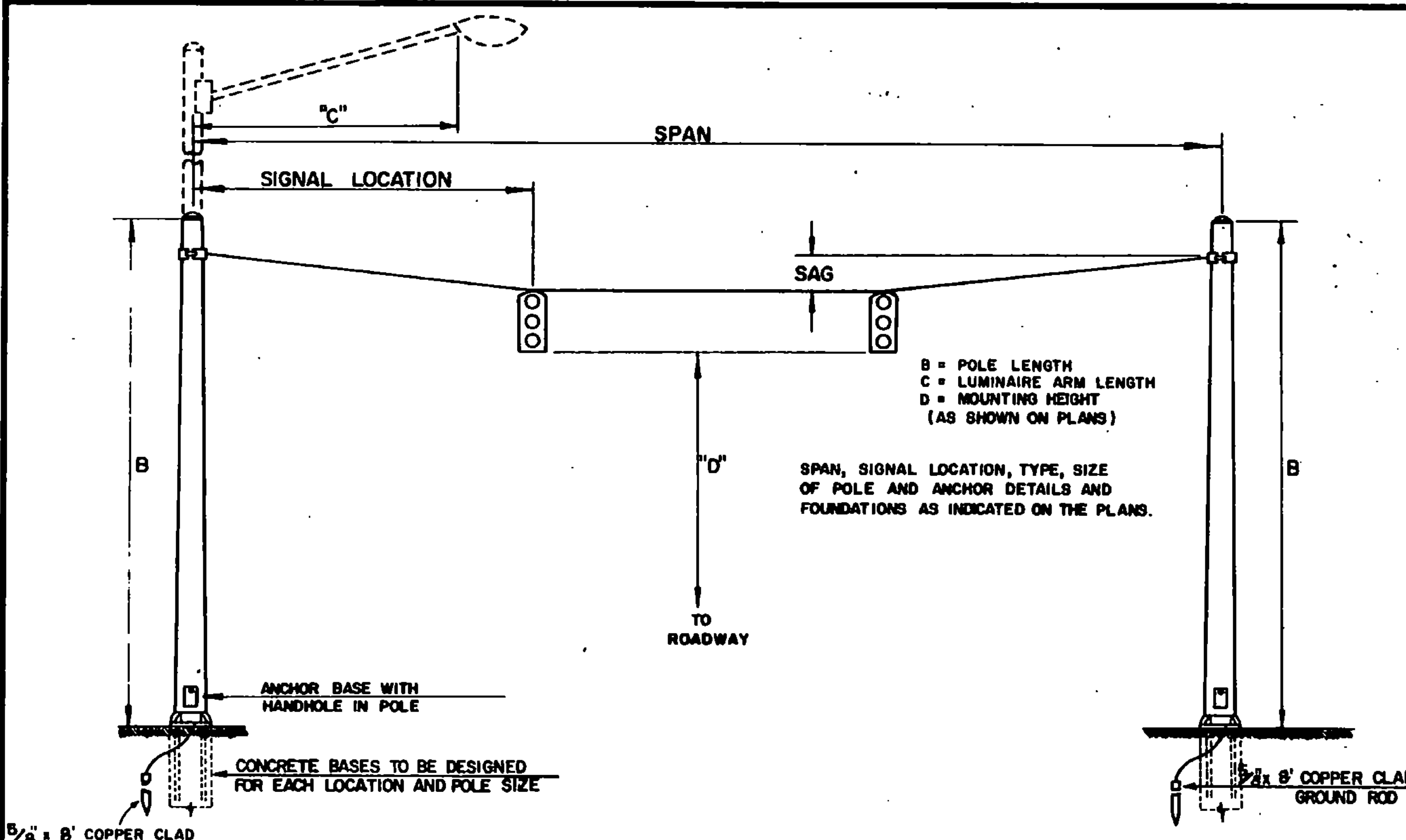
DETAILS OF CONCRETE BASE FOR ABOVE PEDESTAL POST



TRAFFIC SIGNAL POLES WITH BRACKET ARMS FOR SIGNALS (AND LUMINAIRES)



STRAIN POLES FOR SUSPENDED SIGNALS (AND LUMINAIRES)



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.V. Stickey  
ASST. CHIEF ENGINEER

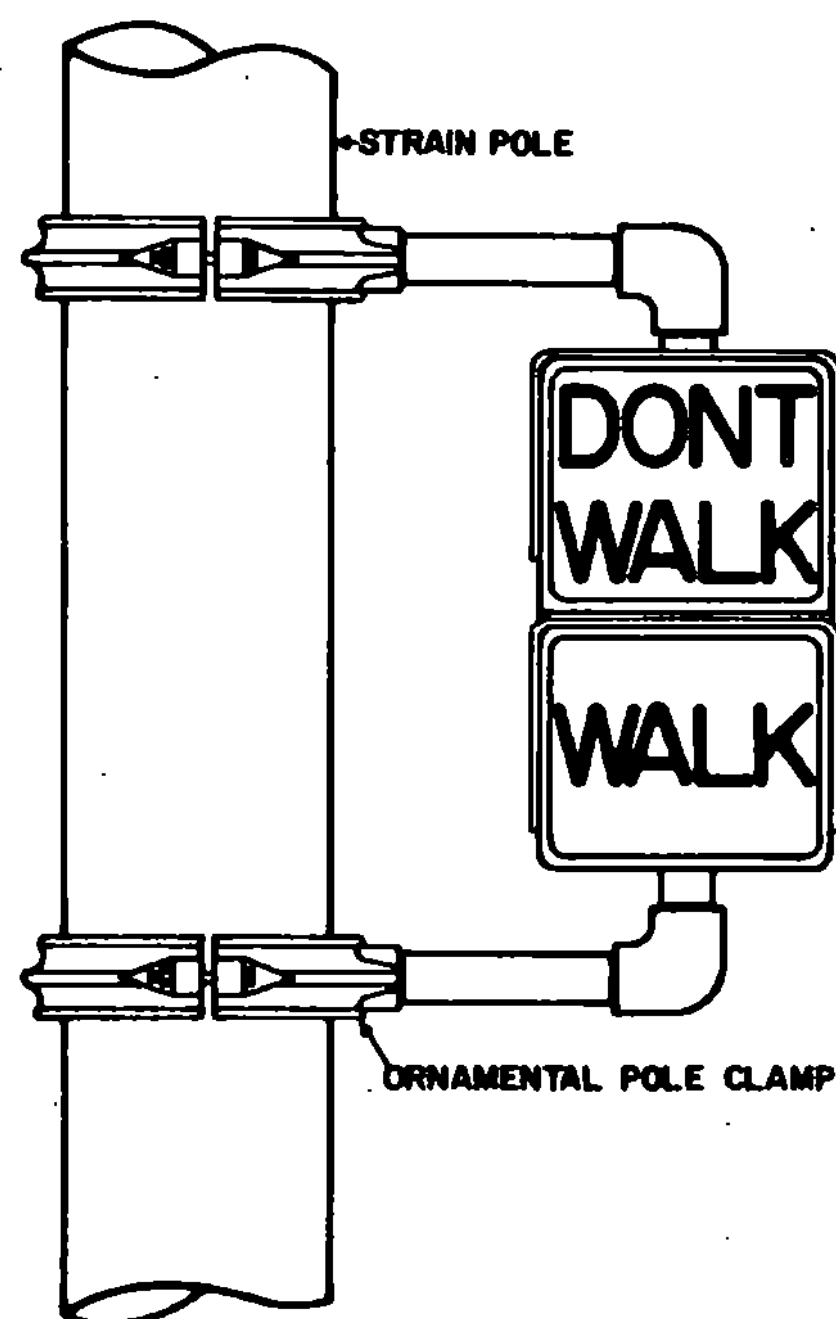
S.M. Lane  
HIGHWAY ENGINEER

TRAFFIC CONTROL SIGNALS



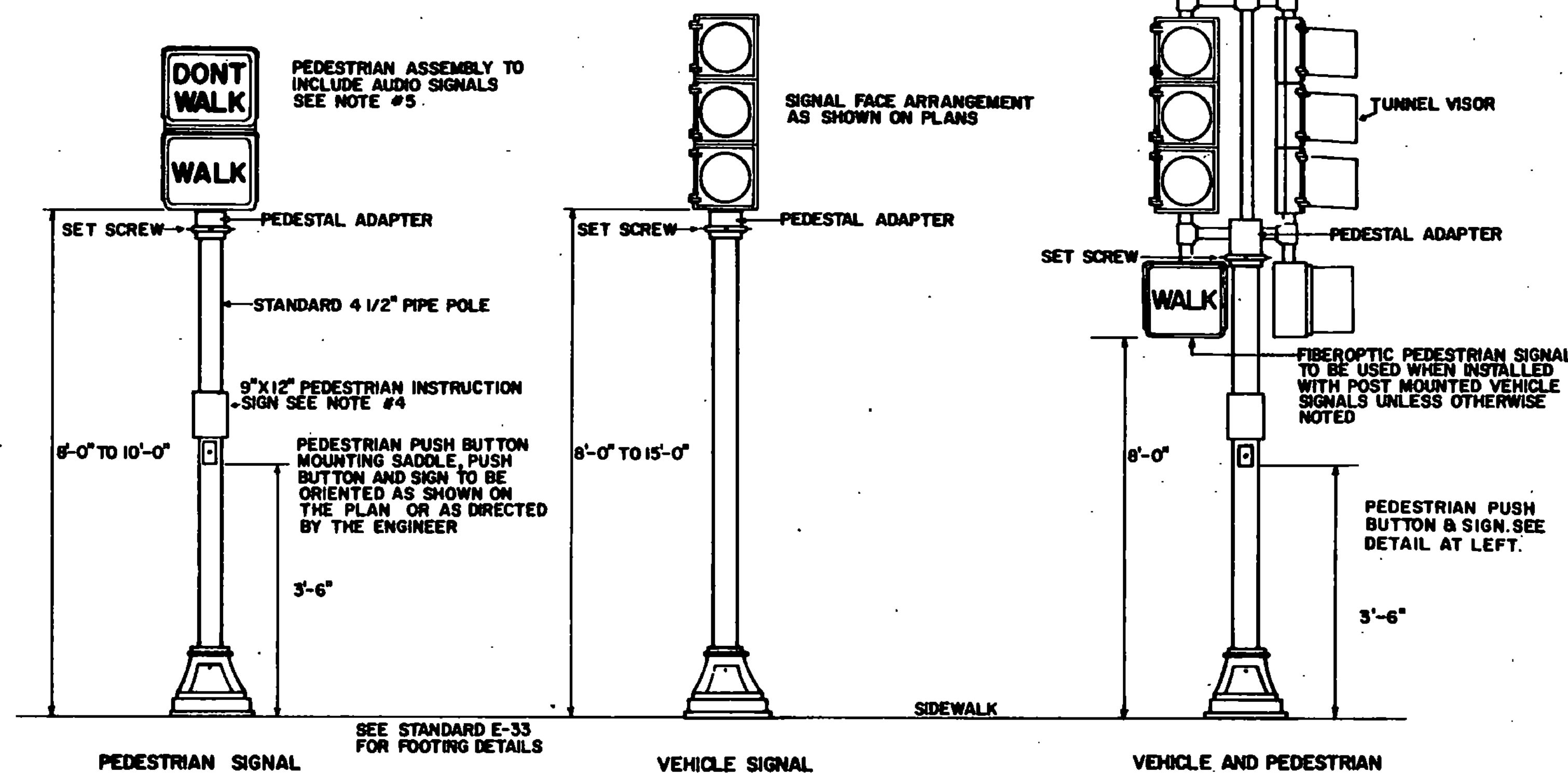
STANDARD

E-33

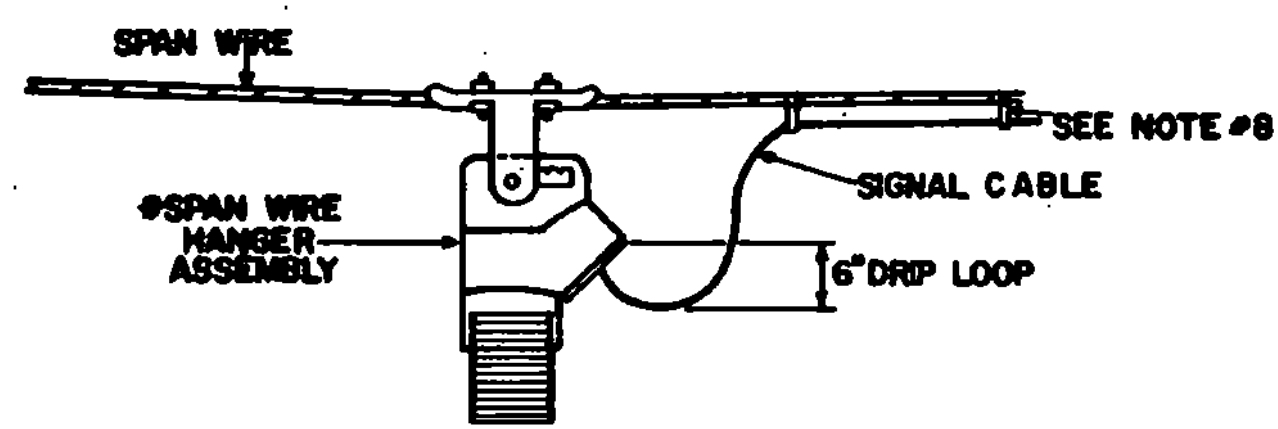


POLE MOUNTING DETAIL

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



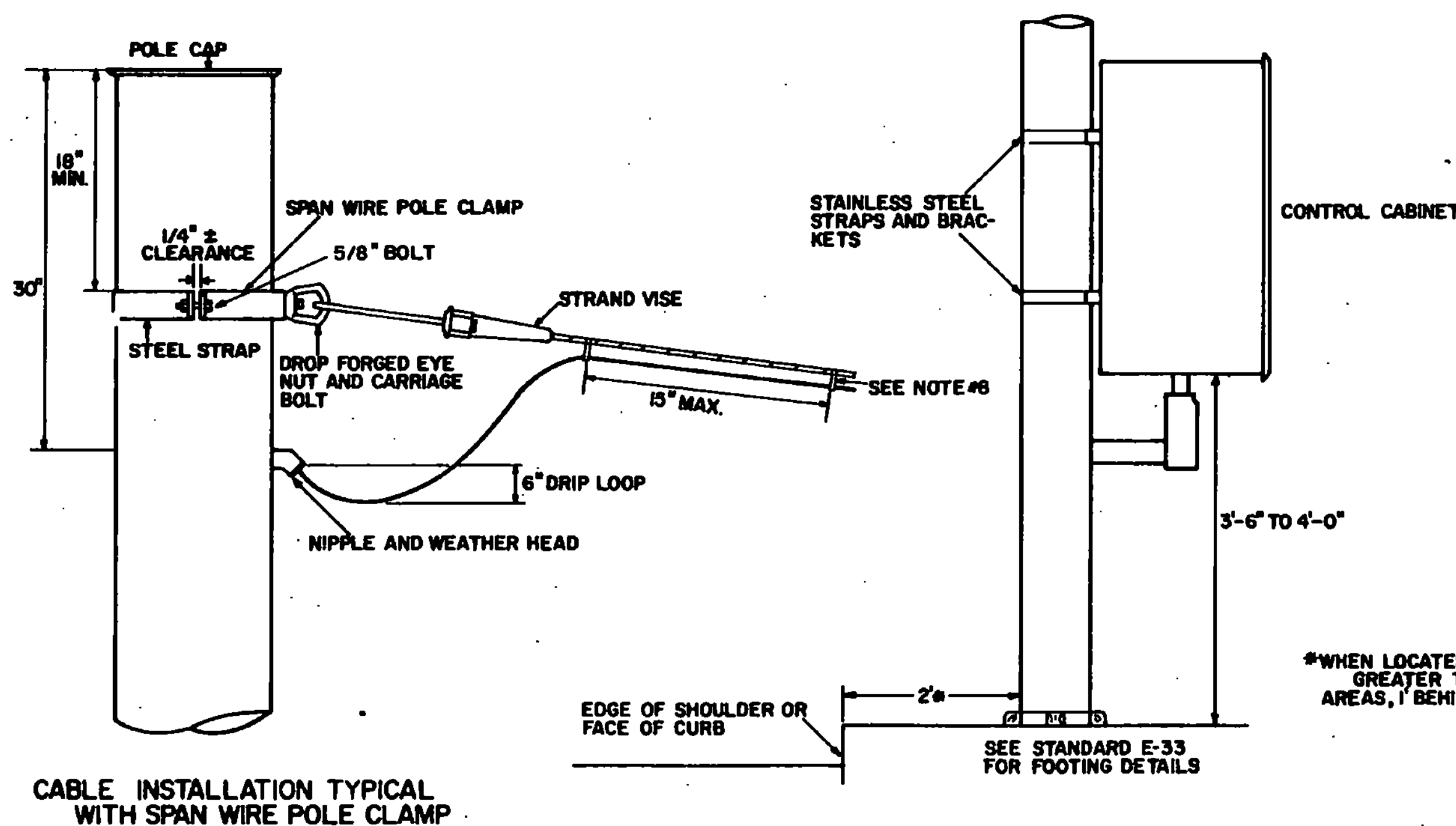
PEDESTAL POLE INSTALLATION



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



CABLE INSTALLATION TYPICAL WITH SPAN WIRE POLE CLAMP

POLE MOUNTED CONTROL CABINET TYPICAL

NOTES

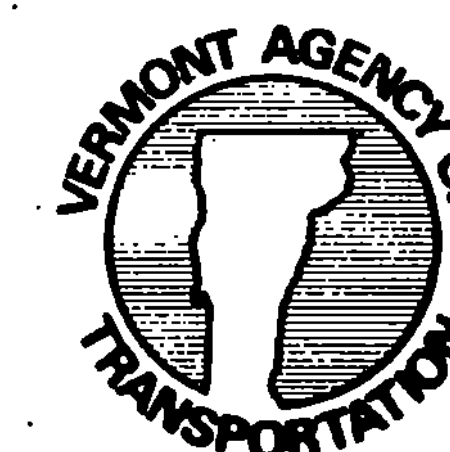
- Dimension "D" as shown on Standard E-33 shall not be less than 16'-6", unless otherwise stated.
- For solid state equipment, the traffic signal equipment design and performance shall meet or exceed all requirements of the NEMA Standards for traffic control systems.
- All electrical wire and cable shall be copper. Electrical signal cable from traffic signal controller to signal heads shall be composed of A.M.S. #12 stranded conductors.
- 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.
- 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. The contractor shall submit the proposed system for review prior to installation.
- 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 VAOT Traffic Design Section. Timing adjustments shall be subsidiary to Item 678.15, Traffic Control Signals.
- 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.
- 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 (spanning) wire.
- 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.
- 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.
- 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.
- THE CONFLICT MONITOR SHALL BE CAPABLE OF DETECTING A LACK OF RED SIGNAL AS WELL AS THE GREEN, YELLOW & WALK SIGNALS.
- 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.
- 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.
- 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.
- FOR PROGRAMABLE SOLID STATE CONTROLLERS TWO COPIES OF THE FINAL PROGRAM LISTING SHALL BE PROVIDED AND DISTRIBUTED AS DETAILED IN NOTE 15.
- 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 1986 SPECIFICATIONS

APPROVED: JULY 31, 1981  
 DATE  
 DIRECTOR OF ENGINEERING AND CONSTRUCTION  
 CHIEF OF DESIGN  
 TRANSPORTATION DESIGN ENGINEER

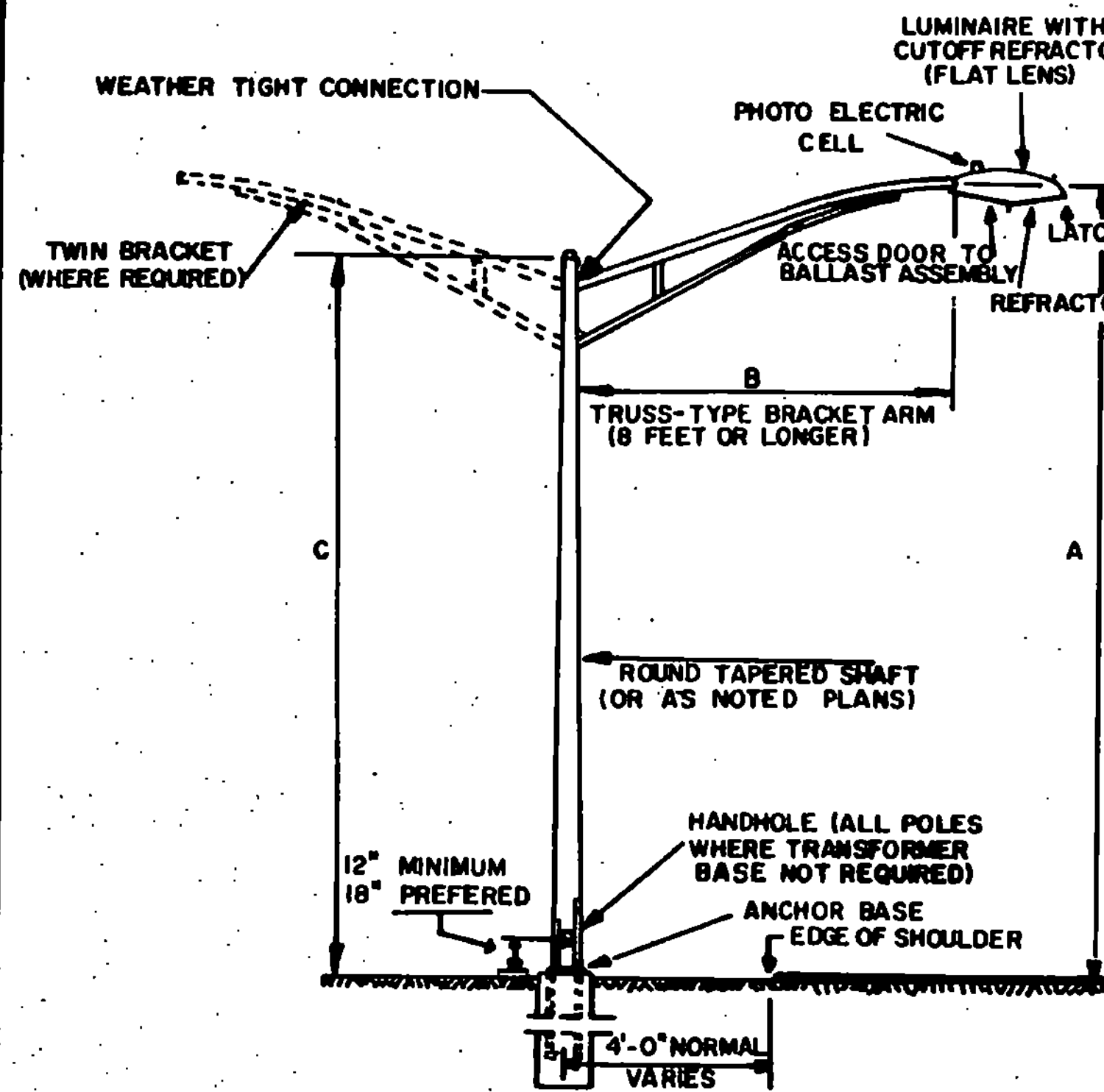
TRAFFIC SIGNAL ITEM DETAILS



STANDARD  
 E-34

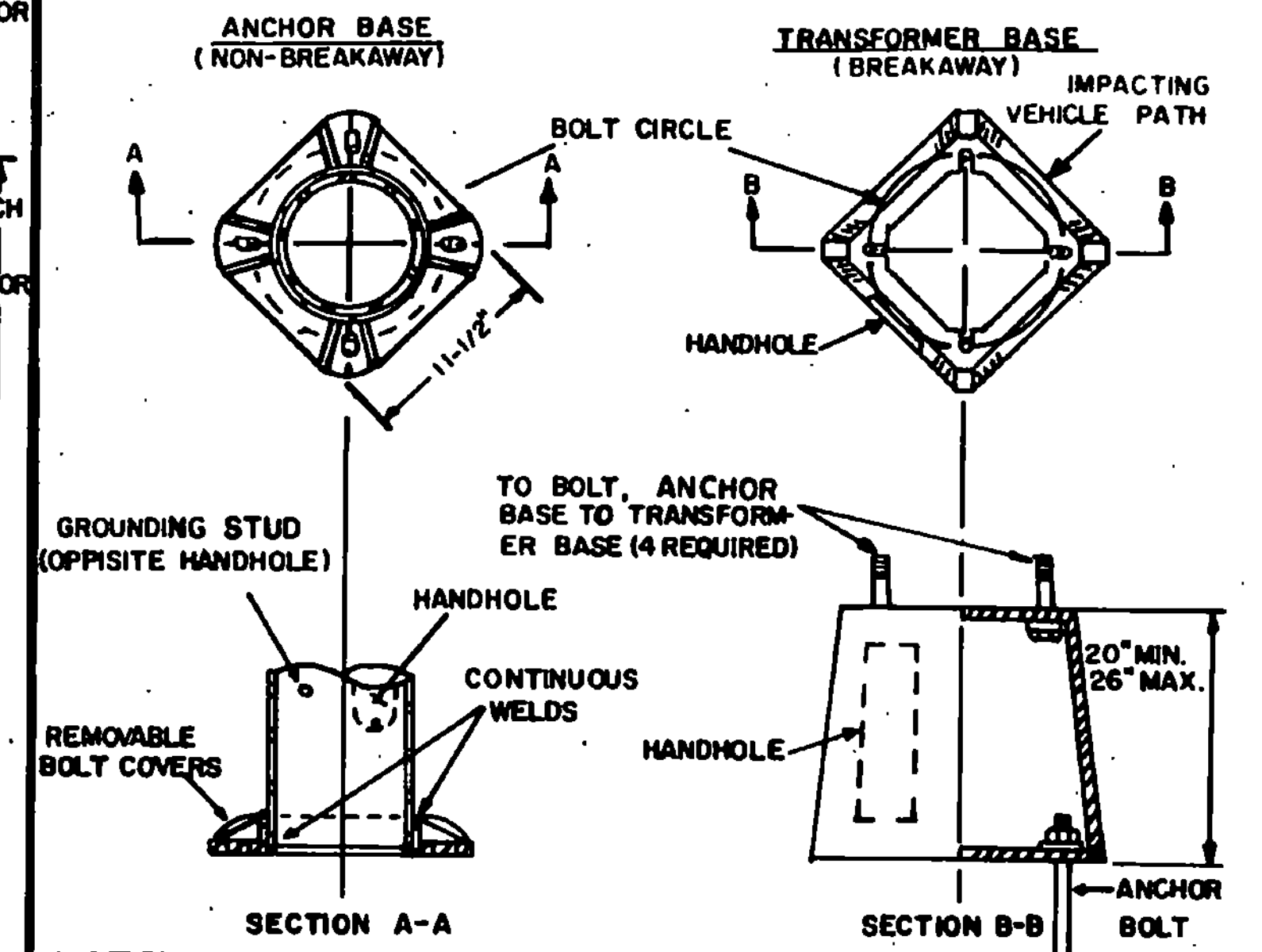


**ROUND ALUMINUM AND STEEL POLES**



**BASES**

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

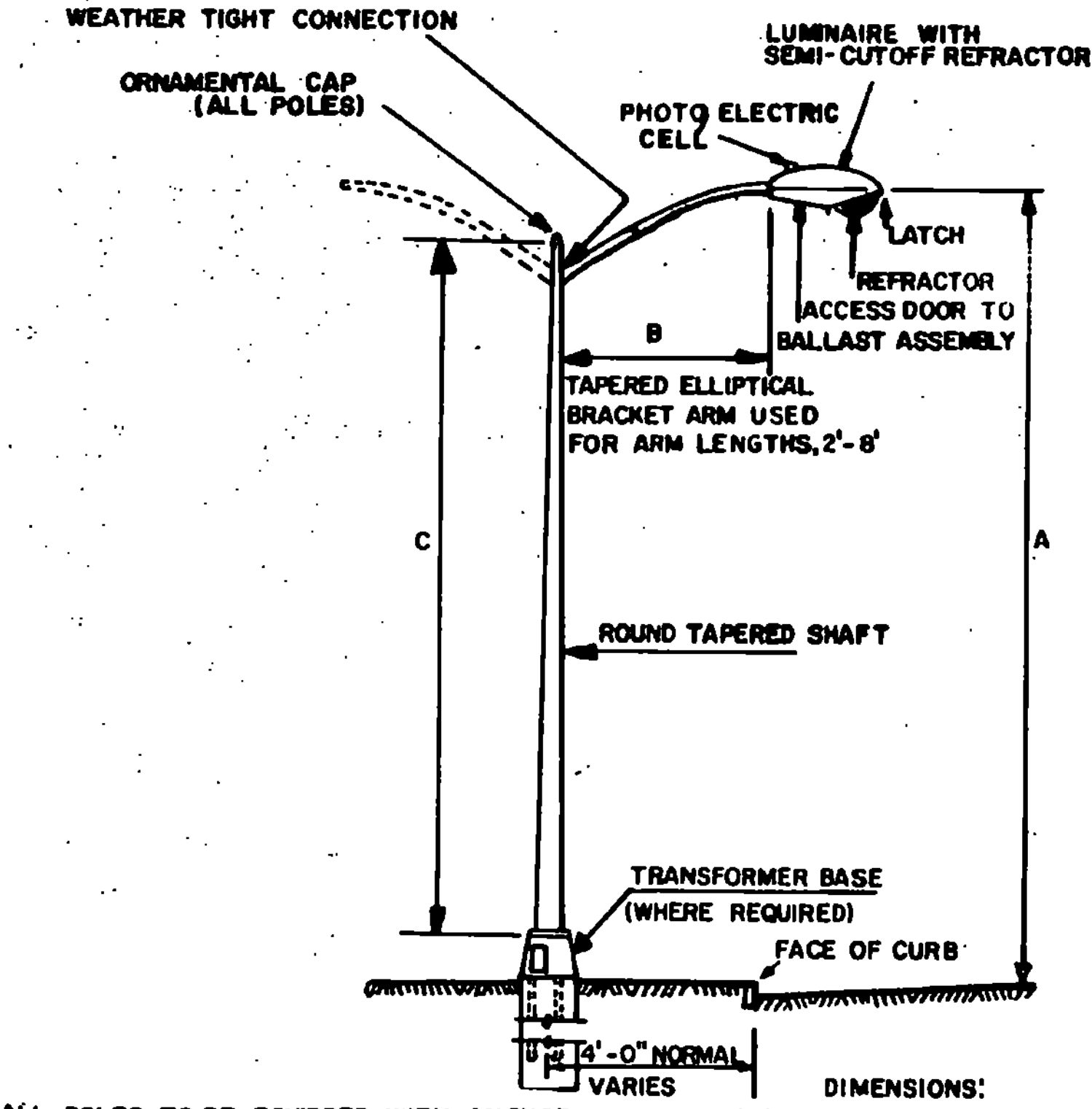


**NOTE:**  
FOR BREAKAWAY DESIGN A TRANSFORMER BASE, BREAKAWAY COPLINGS, OR OTHER APPROVED METHOD SHALL BE PLACED BETWEEN THE ANCHOR BASE AND THE CONCRETE BASE.

ANCHOR BOLT TEMPLATE FURNISHED BY POLE MANUFACTURER

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

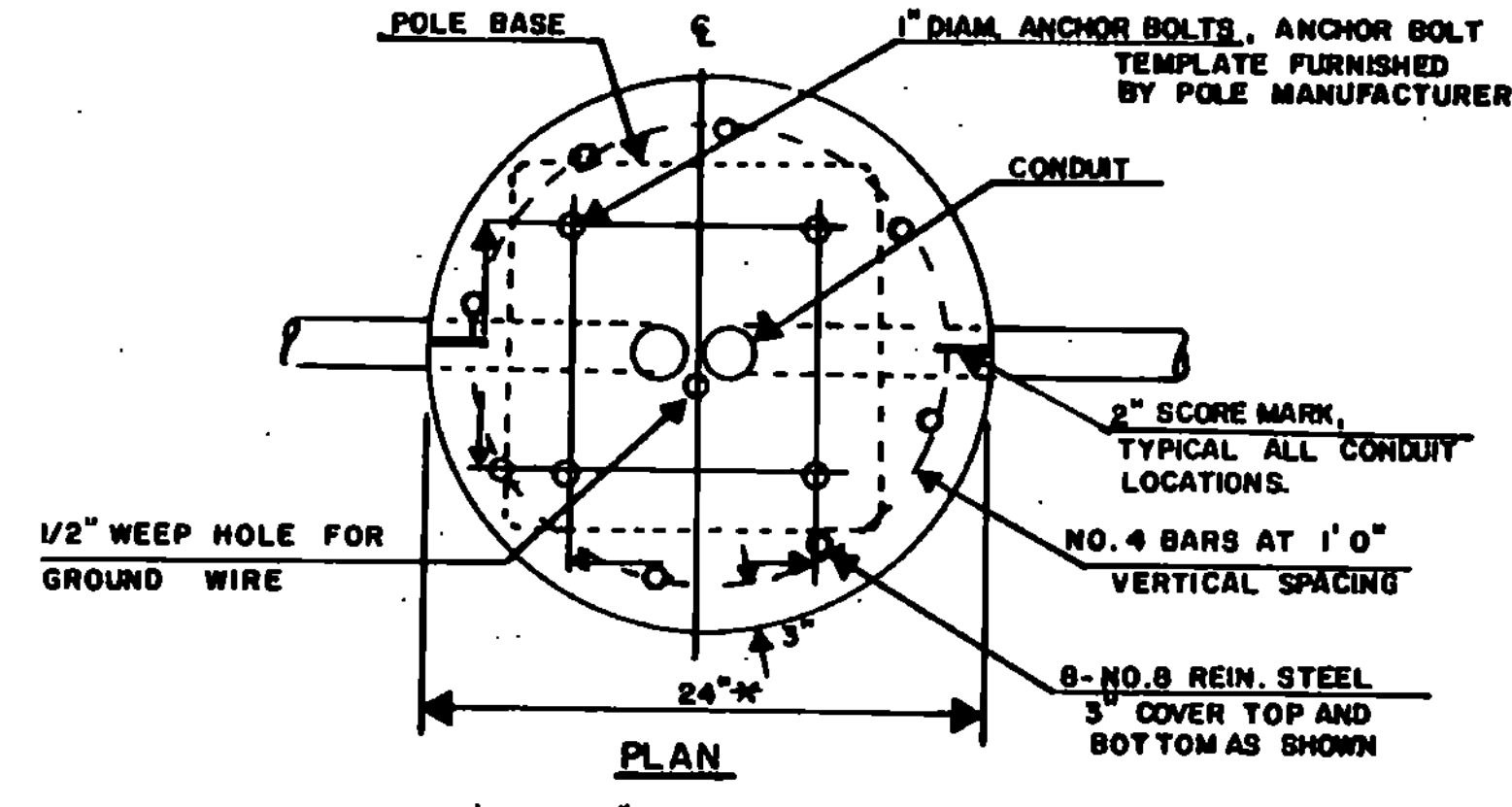
1. NO POLE SHALL BE INSTALLED WITHOUT A LUMINAIRE.
2. ANCHOR BASE AND ANCHOR BOLT DIMENSIONS SHOWN ARE FOR A SINGLE ARM POLE OF HEIGHT 35 FEET OR LESS. SEE PLANS FOR OTHER CONDITIONS.
3. ALL POLES OF THE BREAKAWAY DESIGN SHALL YIELD OR BREAKAWAY WITH A CHANGE IN VEHICLE MOMENTUM OF LESS THAN 1100 POUND-SECONDS 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.



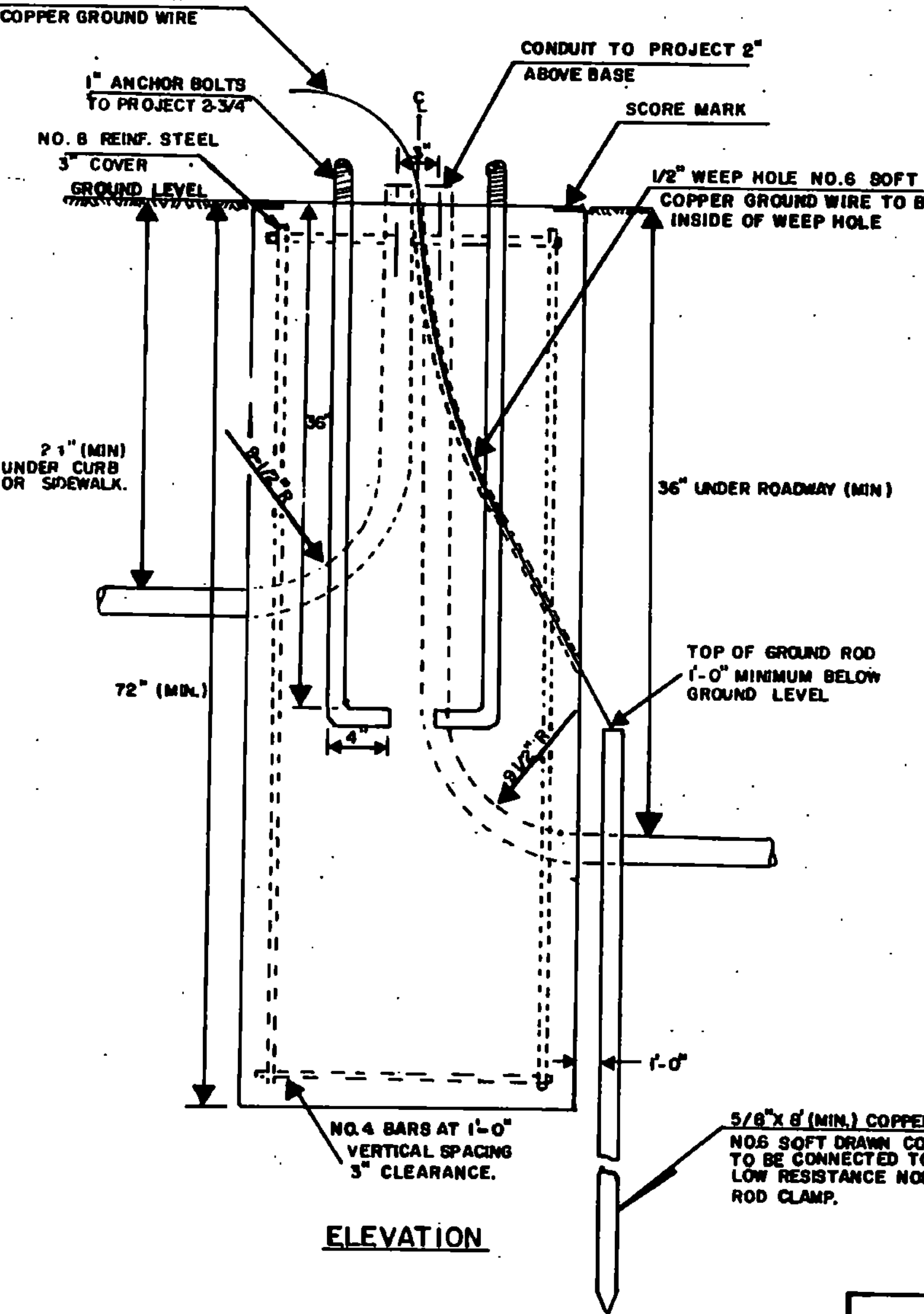
ALL POLES TO BE EQUIPPED WITH ANCHOR BASES UNLESS OTHERWISE INDICATED.

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

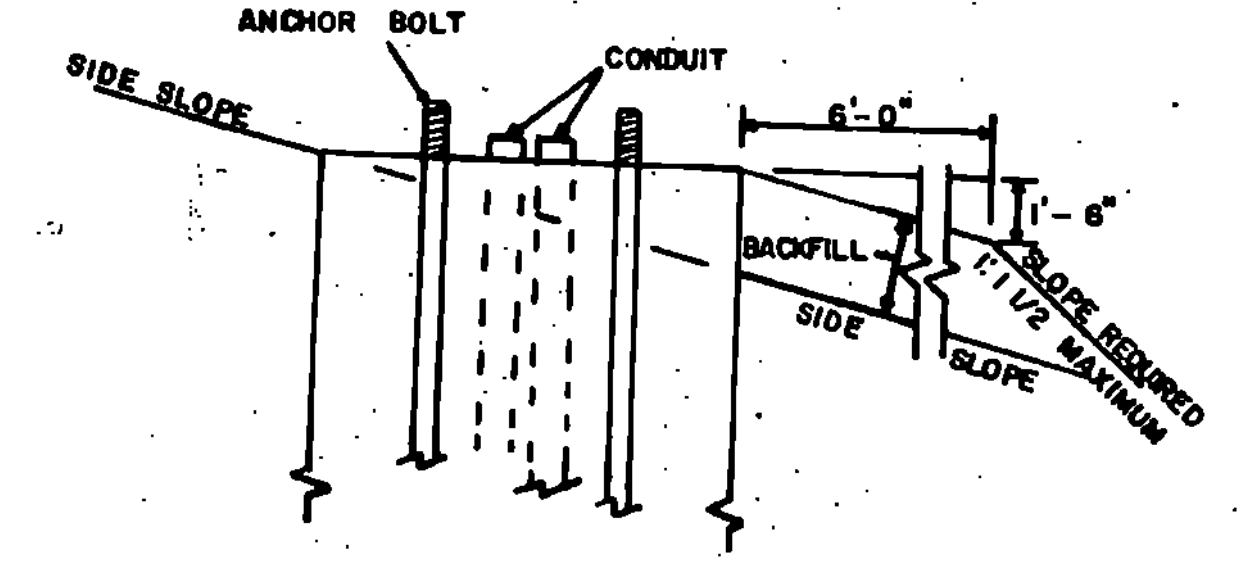
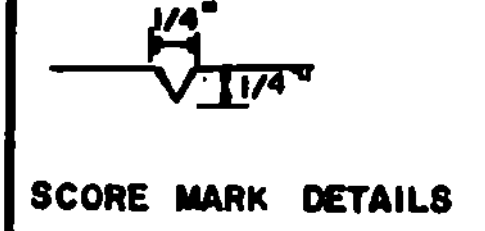
DIMENSIONS:  
A=MOUNTING HEIGHT  
B=BRACKET ARM LENGTH  
C=POLE HEIGHT



\*USE 30" WITH TRANSFORMER BASES, ARM OVER 8' LONG OR WHEN OTHERWISE NOTED.



**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 (S&C) COMPIT SIZE- AS SHOWN ON THE PLANS.
5. ALL 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



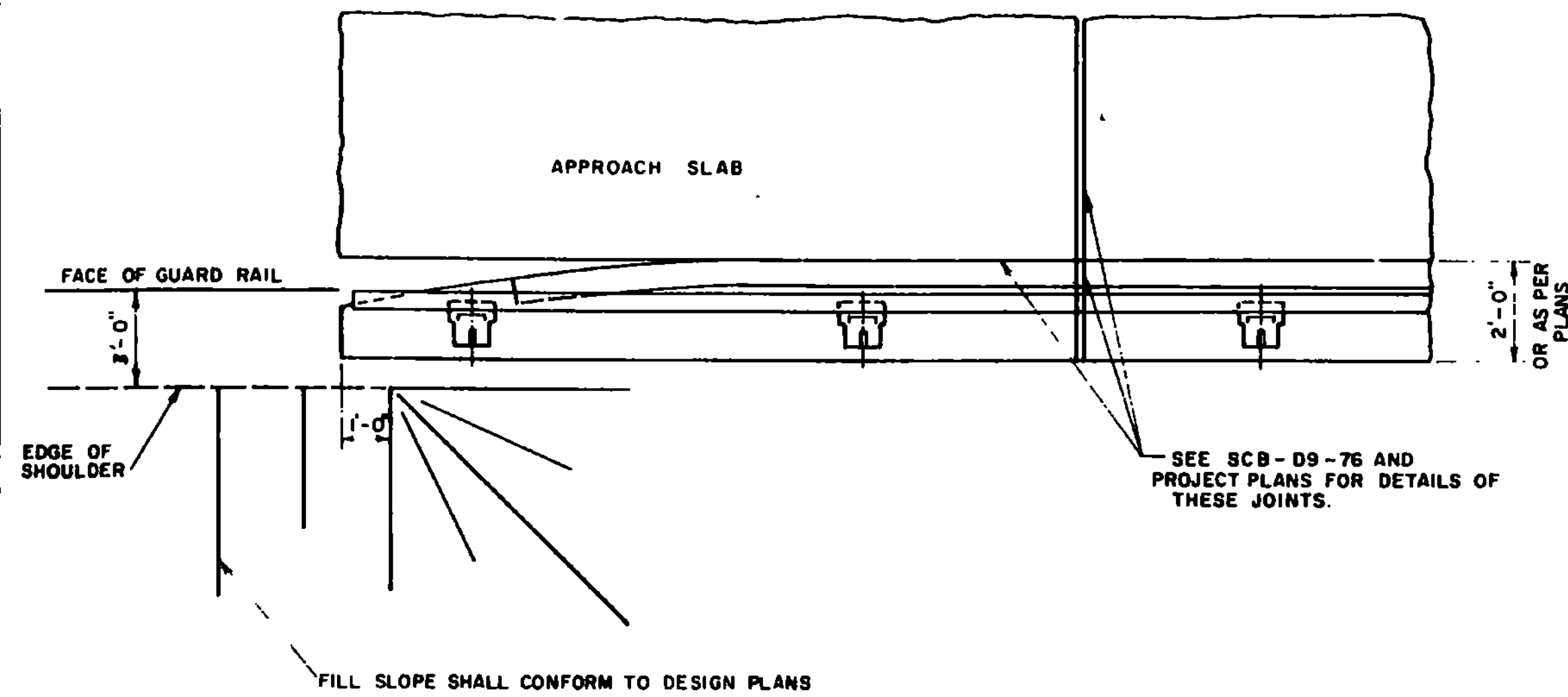
GENERAL NOTES

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.

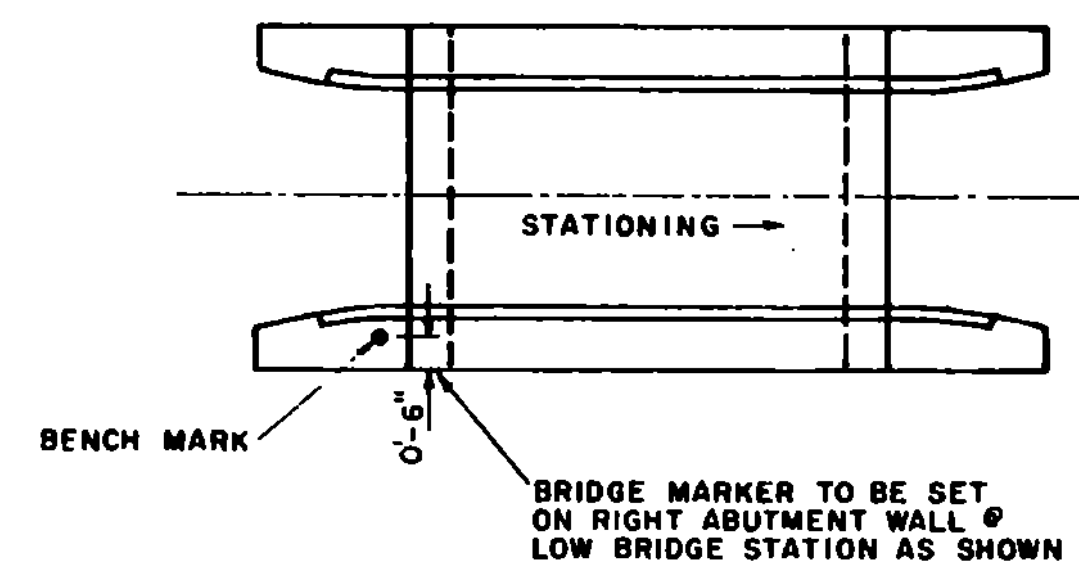
THE FOLLOWING NOTES SHALL APPLY UNLESS OTHERWISE NOTED ON PROJECT PLANS.

- 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.
  - 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.
  - 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.
  - ALLOWABLE DESIGN STRESSES: \*  

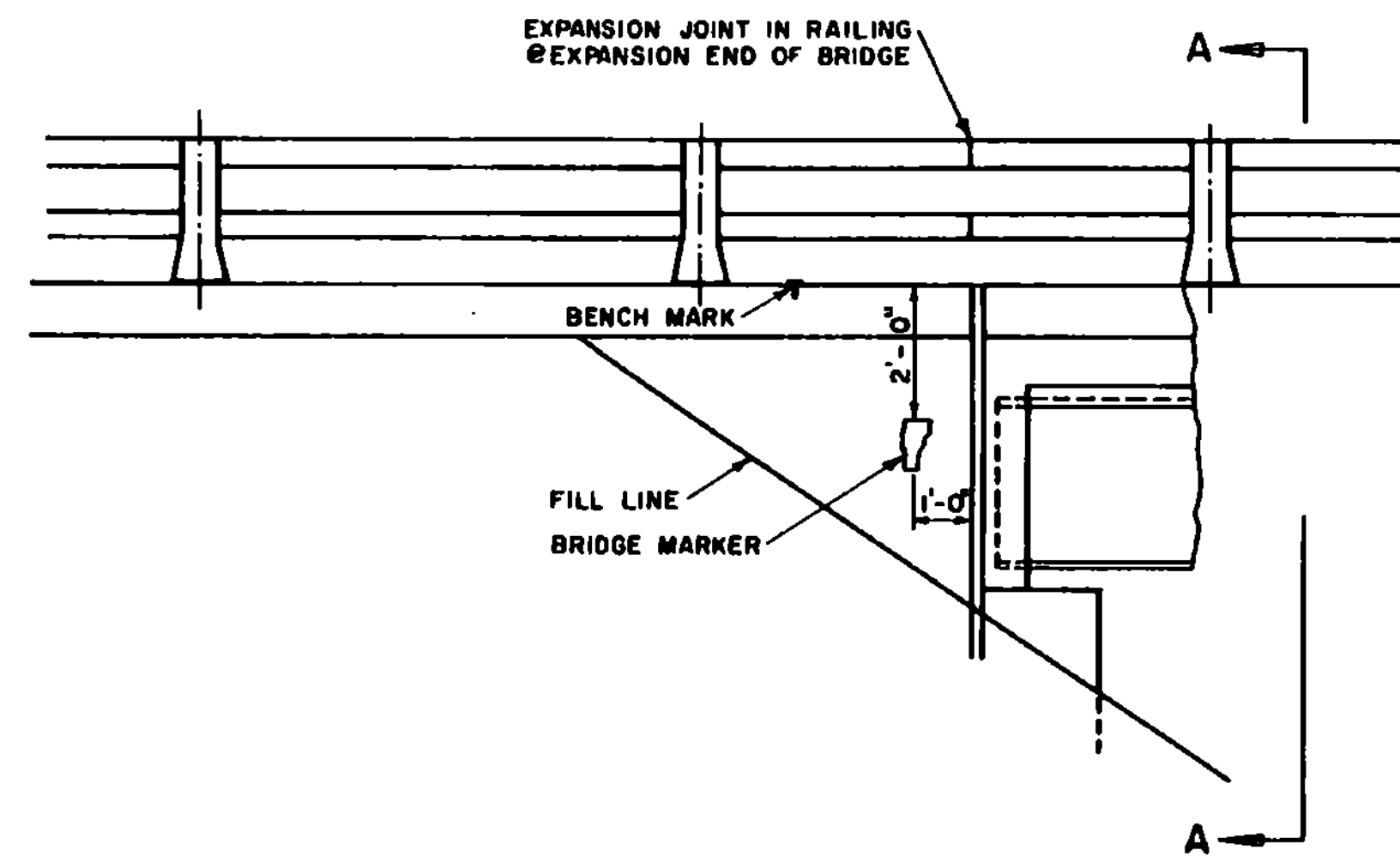
CONCRETE: CLASS A	f'c	3,500 psi	fc	1400 psi
CLASS B	f'c	3,500 psi	fc	1400 psi
STRUCTURAL STEEL:				
A-588 MAX. DESIGN STRESS		27,000 psi	(or as per AASHTO Specs)	
REINFORCING STEEL:				
DESIGN STRESS (TENSION)	GRADE 40	20,000 psi	GRADE 60	24,000 psi
DESIGN STRESS (COMPRESSION)		16,000 psi		20,000 psi
  - 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.
  - MINIMUM COVER FOR REINFORCING STEEL (EXCEPT IN DECKS) SHALL BE 2" IN BACK FACES OF WALLS AGAINST EARTH AND 3" ELSEWHERE.
  - ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND SUPERSTRUCTURE SHALL BE CHAMFERED 1" x 1".
  - DECK CONCRETE SHALL BE CONCRETE CLASS A. ALL OTHER CONCRETE SHALL BE CONCRETE CLASS B.
  - 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.
  - ABUTMENT CONCRETE ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL PREFERABLY NOT BE PLACED UNTIL FINAL FINISHED GRADE OF DECK IS ESTABLISHED BY THE ENGINEER.
  - 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).
  - GRANULAR BORROW USED IN AREAS THROUGH WHICH PILES ARE TO BE DRIVEN SHALL HAVE A MAXIMUM STONE SIZE OF NINE INCHES.
  - BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND DO NOT WARRANT ACTUAL SUB-SURFACE CONDITIONS.
  - 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.
- 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.
  - REINFORCING PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:  
 SPACING TOLERANCE: ± 1"  
 CLEARANCE TOLERANCE: ± 1/4"



PLAN AT ABUTMENT



SECTION A-A



ELEVATION AT ABUTMENT

- REVISIONS AND CORRECTIONS
- Added word seat in line 3 of Note #9 J. WOOD 4-23-75
  - CHANGED VERMONT SPEC. DATE, GEN. NOTE, AND ADDED NOTE NO. 15, W. TRIPP 4-26-76.
  - REVISED NOTES, W. TRIPP, 12-18-76.
  - REVISED DATES, NOTE NO. 3 W. TRIPP 4-25-77
  - REVISED NOTES W. TRIPP 4-3-78
  - REVISED NOTE NO. 3, DATES W. TRIPP 9-14-81

APPROVED

DATE

CHIEF ENGINEER

ASST. CHIEF ENGINEER

BRIDGE ENGINEER

DETAILS OF W BEAM BRIDGES  
 GENERAL INFORMATION  
 AND  
 GENERAL NOTES

VERMONT  
 DEPARTMENT  
 OF HIGHWAYS  
 STANDARD

SCB-DI-75