INDEX OF SHEETS

HARTLAND-HARTFORD-SHARON

INDEX OF SHEETS

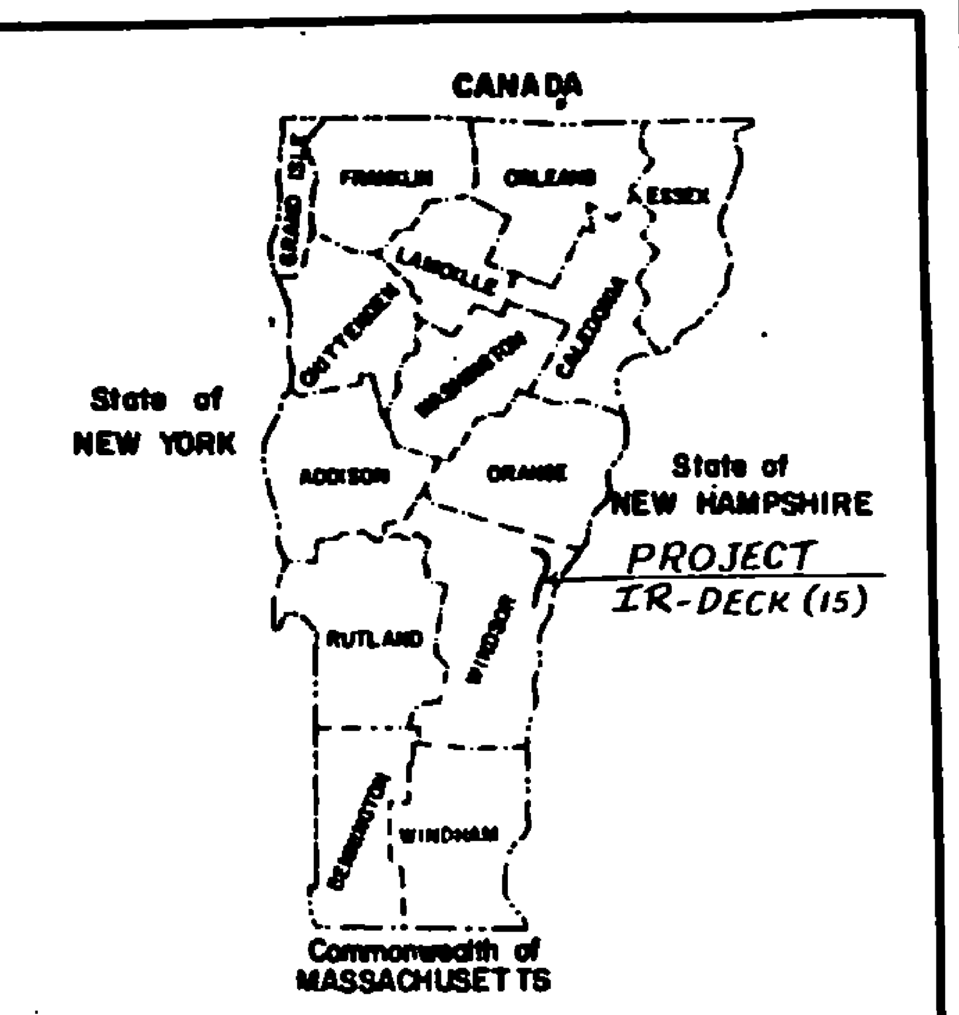
REFERENCE STANDARDS

E-2	2/3/86R
E-6	"
E-7	"
E-7a	"
E-8	"
E-15a	"
E-15b	"
E-19	"
E-19b	"
E-24	"
E-24a	"
E-25	"
E-27	"
E-29	"
E-33	"
E-34	"
E-38	"
E-50	"
SCB-D1-75	9/14/81R
E-9A	2/5/86R

STATE OF VERMONT
AGENCY OF TRANSPORTATION

CONTRACT · PLANS

THESE PLANS DO NOT REFLECT CHANGES MADE ON THE PROJECT.



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF HARTLAND, HARTFORD, SHARON

COUNTY OF WINDSOR

ROUTE NO: U.S. 5 - BRIDGE No. 58A, U.S. 4 - BRIDGE No. 65A, I-89 - BRIDGE No. 15 N & S

PROJECT LOCATION: HARTLAND - BR. No. 58A; U.S. 5 OVER I-91, HARTFORD - BR. No. 65A; U.S. 4 OVER I-89, SHARON - BR. No. 15 N & S; I-89 OVER VT. 132

PROJECT DESCRIPTION: INSTALL TRAFFIC CONTROL SYSTEMS, STRIP PAVEMENT, PATCH DECK AS REQUIRED, REPAIR JOINTS AS NECESSARY, INSTALL SHEET MEMBRANE WATERPROOFING AND REPAVE ALL BRIDGES LISTED ABOVE, REMOVE TRAFFIC CONTROL SYSTEMS.

LENGTH OF STRUCTURES IR-DECK (15) 875.18 FEET (58A 220.18', 65A 311.00, 15N 172.00, 15S 172.00)

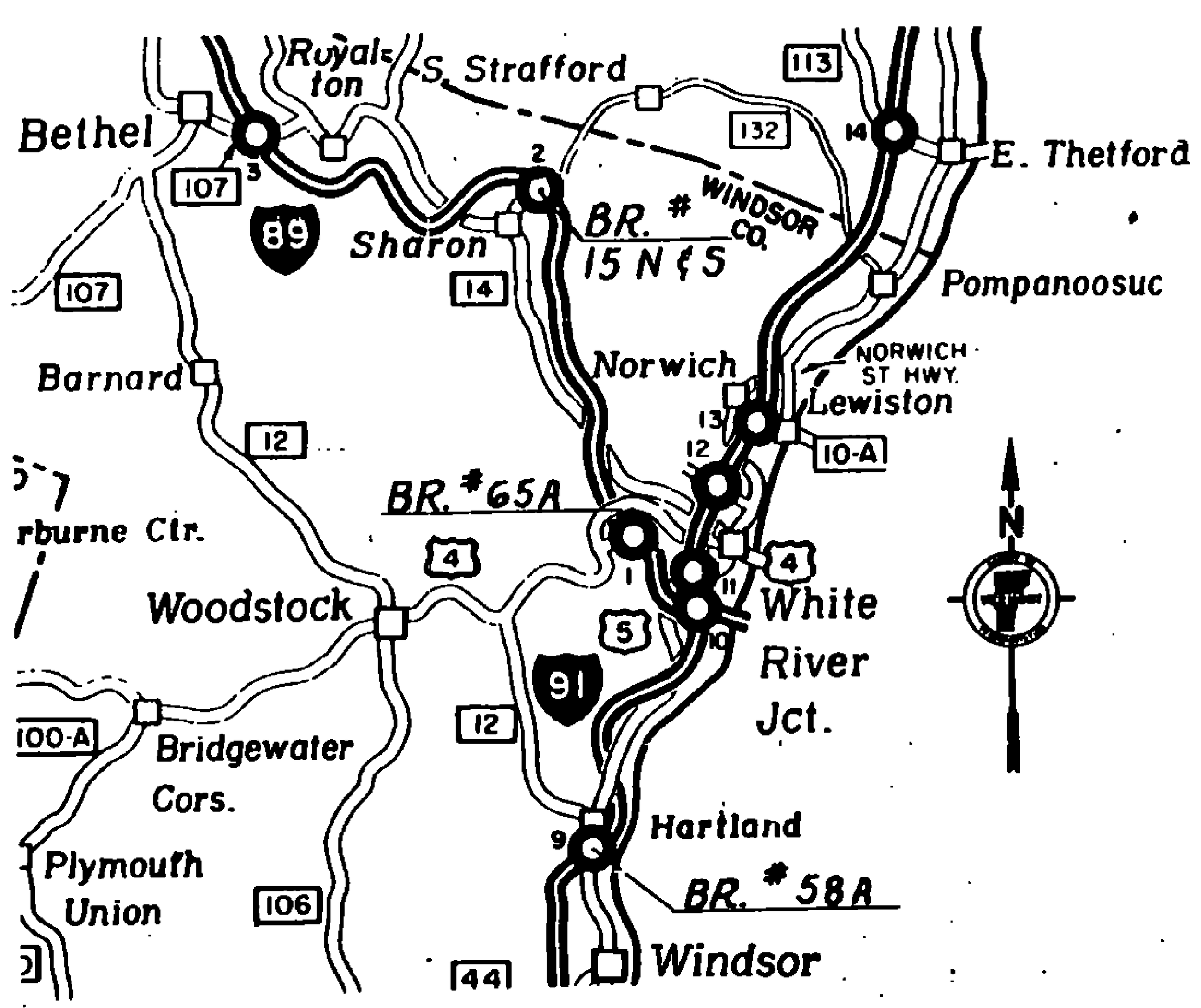
Date APR 3 1987

McSheffrey Contracting Co., Inc.
Contractor

[signature]
Signature

President
Title

[signature]
Transportation Secretary's Signature



LOCATION MAP

0 4 8
SCALE IN MILES

CONVENTIONAL SIGNS

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

DATUM
VERTICAL ______
HORIZONTAL ______

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

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1986, FOR USE ON THESE PROJECTS, INCLUDING ALL SUBSEQUENT PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

SUBMITTED BY ORDER OF THE STATE TRANSPORTATION BOARD

APPROVED [signature] DATE 8/18/86
DIRECTOR OF ENGINEERING AND CONSTRUCTION

PROJECT HARTLAND, HARTFORD, SHARON	PROJECT NO. IR-DECK (15)

SHEET 1 OF 39 SHEETS

0-10 SJB 7/21/81

DRAWING 44-131 40583-1

QUANTITIES

NO.	ITEM	UNIT	IR - DECK (15)				GRAND TOTAL
			15N	15S	58A	65A	
210.10	COLD PLANING - BIT. PAVEMENT	S.Y.	210	210	170	170	760
406.25	BITUMINOUS CONCRETE PAVEMENT	TON	130	130	80	140	480
501.45	PREPARATION OF CONCRETE SURFACE, CLASS I (MOD)	S.Y.	2	2	5	9	18
501.46	PREPARATION OF CONCRETE SURFACE, CLASS II (MOD)	S.Y.	22	32	79	164	297
501.49	SURFACE PREPARATION FOR MEMBRANE	S.F.	321	321	287	467	1396
501.52	CONCRETE, CLASS AA (QUICK SETTING)	C.F.	2	2	3	4	11
507.15	REINFORCING STEEL	LBS.	610	610	770	1090	3080
514.10	WATER REPELLENT	GAL.	15	15	16	24	70
519.20	SHEET MEMBRANE WATERPROOFING	S.Y.	729	729	648	1050	3156
524.10	JOINT SEALER, HOT POURED	GAL.	2	2	1	2	7
524.15	JOINT SEALER, PREFORMED NEOPRENE	L.F.	130	133	61	130	454
524.20	JOINT SEALER, POLYURETHANE	GAL.	1	1	1	1	4
527.10	MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS	L.S.			0.5	0.5	1
529.10	REMOVAL OF BRIDGE PAVEMENT	S.Y.	760	760	670	1070	3260
529.25	REMOVAL OF CONCRETE OR MASONRY (MOD)	C.Y.	1	2	2	1	6
621.90	TEMPORARY TRAFFIC BARRIER	L.F.	1020	1020			2040
630.10	UNIFORMED TRAFFIC OFFICERS	HOUR	75	75	95	130	375
630.15	FLAGGERS	HOUR	305	305	310	430	1350
631.15	FIELD TESTING	L.S	0.19	0.20	0.25	0.36	1
635.10	MOBILIZATION	L.S.	0.19	0.20	0.25	0.36	1
641.10	TRAFFIC CONTROL	L.S.	0.50	0.50			1
646.50	TEMPORARY 4" WHITE LINE	L.F.	350	350	560	750	2010
646.51	TEMPORARY 4" YELLOW LINE	L.F.	240	240	1840	2210	4530
678.15	TRAFFIC CONTROL SIGNAL SYSTEM (MOD)	EA.			1	1	2
678.22	VEHICLE LOOP DETECTOR (MOD)	L.F.			136	160	296

PROJECT DESCRIPTION

BR 58A - US 5 OVER I 91

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS PER SHEET 9.
2. DECK REHABILITATION INCLUDES REMOVING THE EXISTING PAVEMENT AS PER GENERAL NOTES USING CARE AT THE CONCRETE SHOULDERS ALONG THE CURBS AND AT THE FINGER PLATE JOINT, REPAIR CONCRETE AS REQUIRED TO INCLUDE REPAIR OF CONCRETE SHOULDERS AT CURBS AND AT THE FINGER PLATE JOINT, FLUSHING METAL TROUGHS AND DOWNSPOUTS, REPAIRING COMPRESSION SEALS, REPOINTING GRANITE CURBS, INSTALLING NEW SHEET MEMBRANE WATERPROOFING, REPAVING WITH 1 3/4 INCHES BITUMINOUS CONCRETE PAVEMENT AND THE APPLICAION OF NEW CENTER AND EDGE LINES.
3. REMOVE TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS.

BR. 15 N & S I 89 OVER VT. 132

1. INSTALL TEMPORARY TRAFFIC CONTROL SYSTEM AS PER SHEET 5-8.
2. DECK REHABILITATION INCLUDES REMOVING THE EXISTING PAVEMENT AS PER GENERAL NOTES AND SPECIFIC NOTES USING CARE AROUND METAL PLATE JOINTS, REPAIRING CONCRETE AS REQUIRED, THE ADDITION OF CONCRETE SHOULDERS AT THE METAL PLATE JOINTS, STRAIGHTENING OF METAL PLATES AT JOINTS AS REQUIRED, FLUSHING METAL TROUGHS AND DOWNSPOUTS, REPAIRING COMPRESSION SEALS, REPOINTING GRANITE CURBS, INSTALLING NEW SHEET MEMBRANE WATERPROOFING, REPAVING WITH 2 1/8 INCHES BITUMINOUS CONCRETE PAVEMENT AND THE APPLICATION OF NEW CENTER AND EDGE LINES.
3. REMOVE TEMPORARY TRAFFIC CONTROL SYSTEM.

BR 65 A - US 4 OVER I 89

1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS PER SHEET 10.
2. DECK REHABILITATION INCLUDES REMOVING THE EXISTING PAVEMENT AS PER GENERAL NOTES USING CARE AROUND METAL PLATE JOINTS, REPAIRING CONCRETE AS REQUIRED, THE ADDITION OF CONCRETE SHOULDERS AT THE METAL PLATE JOINTS, STRAIGHTENING OF METAL PLATES AT JOINTS AS REQUIRED, FLUSHING METAL TROUGHS AND DOWNSPOUTS, REPAIRING COMPRESSION SEALS, REPOINTING GRANITE CURBS, INSTALLING NEW SHEET MEMBRANE WATERPROOFING, REPAVING WITH 2 INCHES BITUMINOUS CONCRETE PAVEMENT AND THE APPLICATION OF NEW CENTER AND EDGE LINES.
3. REMOVE TEMPORARY TRAFFIC CONTROL SIGNAL SYSTEM AND VEHICLE LOOP DETECTORS.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND - HARTFORD - SHARON	Bridge No. —
Highway No.	Log Sta. —
	Surv. Sta. —

SUMMARY QUANTITY SHEET
AND PROJECT DESCRIPTIONS

Designed By G.S. ROGERS	Drawn By REVANS
Checked By T.H. LACKEY Date 8/86	Bridge Design Supervisor F.W. Balkum Date 8/86
PROJECT HARTLAND - HARTFORD - SHARON	PROJECT NO. IR-DECK(15)
U.C. Info.	
Bridge Sheet No.	Sheet 2 of 39

BRUNING 44-232 44442

BR-6

2

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 12. 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 ℄ 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 11 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'.

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 SHEETS 11&12 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 11, 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 11, DETAIL 3.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND, HARTFORD, SHARON	Bridge No.
Highway No.	Log Sta. / Surv. Sta.
DECK REHABILITATION GENERAL NOTES	
Designed By G.S. ROGERS	Drawn By D.W. NEWTON
Checked By G.S. ROGERS Date 8/'86	Bridge Design Supervisor F.W. Bolkum Date 8/86
PROJECT HARTLAND HARTFORD, SHARON	PROJECT NO. IR-DECK (15)
U.S.C. Info. QSA:[30,32]DECKREHAB	
Bridge Sheet No.	Sheet 3 of 39

3

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_11_. 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 PPOVIDE 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.). EXTEND AS DIRECTED BY THE MANUFACTURER. 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.

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 SLURRY SHALL BE DISPOSED OF IN ACCORDANCE WITH SUBSECTIONS 105.24 AND 105.25.

D. HYDRO-DEMOLITION WILL BE AN ACCEPTABLE METHOD OF REMOVING CONCRETE. THIS SLURRY SHALL BE DISPOSED OF IN ACCORDANCE WITH SUBSECTIONS 105.24 AND 105.25.

E. 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.).

F. 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.

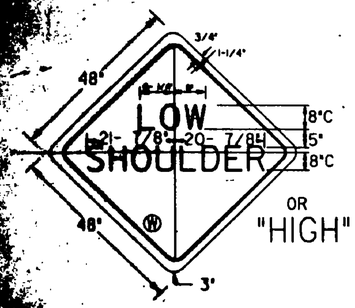
THERE WILL BE NO EXTRA COMPENSATION PAID TO THE HIGHWAY CONTRACTOR FOR ANY INCONVENIENCE CAUSED BY WORKING AROUND AND WITH THE UTILITY COMPANIES AND THEIR FACILITIES.

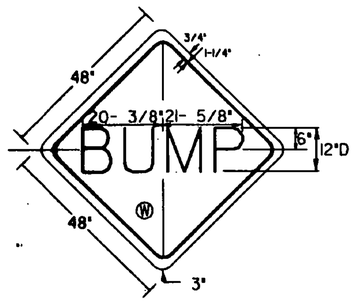
37. FOLLOWING PAVING, ANY BITUMINOUS CONCRETE PAVEMENT THAT BECOMES LODGED IN THE EXPANSION JOINTS OR ENTERS DRAIN TROUGHS, SCUPPERS, OR DOWNSPOUTS WILL BE REMOVED BY THE CONTRACTOR AT NO COST TO THE STATE.

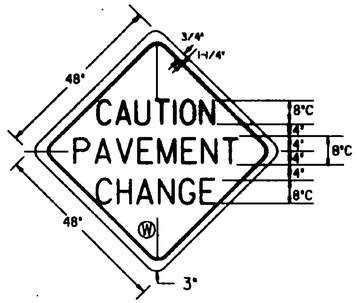
STATE OF VERMONT
AGENCY OF TRANSPORTATION

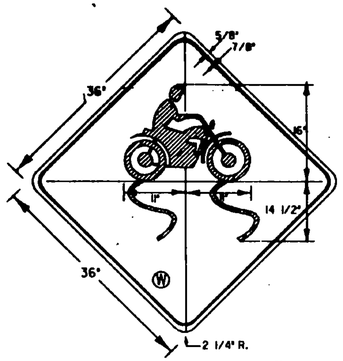
Town of HARTLAND, HARTFORD, SHARON	Bridge No. ——— / Log Sta. ——— / Surv. Sta. ———
Highway No. ———	
DECK REHABILITATION GENERAL NOTES	
Designed By G.S. ROGERS	Drawn By D.W. NEWTON
Checked By G.S. ROGERS Date 8/86	Bridge Design Supervisor F.W. Bolkum Date 8/86
PROJECT HARTLAND, HARTFORD, SHARON	PROJECT NO. IR-DECK (15)
I.G.C. Info. 05AH.30.32JDECKREHAB	
Bridge Sheet No.	Sheet 4 of 39

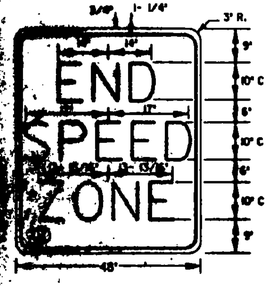
BR-6





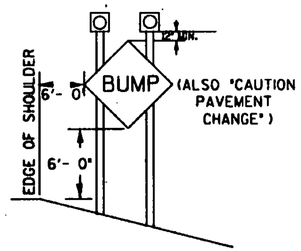




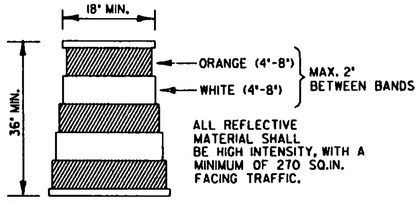


Ⓡ COLORS: LEGEND-BLACK (NON-REFLECTORIZED)
BACKGROUND-WHITE (REFLECTORIZED)
SEE STD. 158 FOR MATERIALS

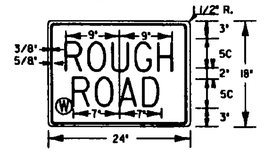
Ⓦ COLORS:
LEGEND BLACK (NON-REFLECTORIZED)
BACKGROUND - ORANGE (REFLECTORIZED HIGH INTENSITY)
SEE STD. E-2 FOR MATERIALS



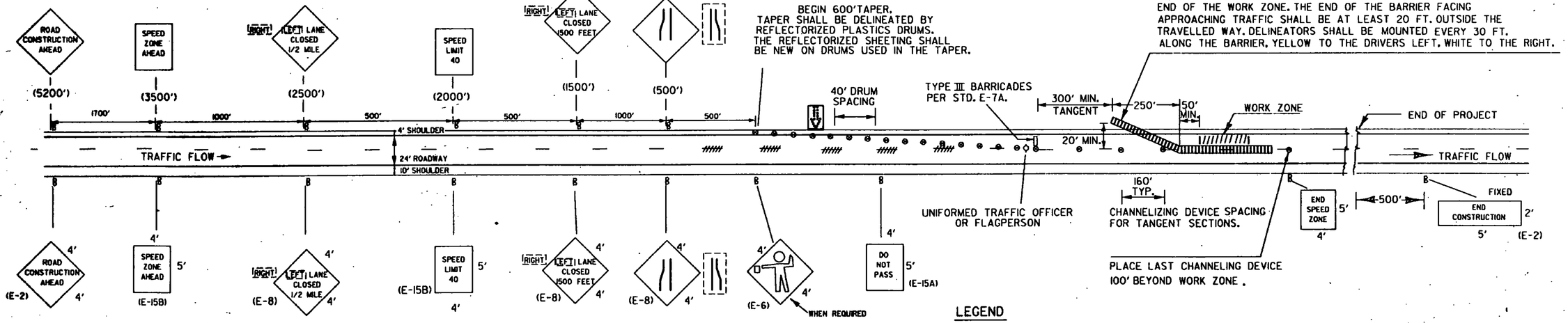
INSTALLATION OF SIGN WITH TWO 8" YELLOW FLASHING SIGNAL BEACONS. USE AS REQUIRED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.



CHANNELIZING DEVICE
REFLECTORIZED PLASTIC DRUM



1. WHEN WORKING AT OR NEAR THE EXIT OR ENTRANCE RAMPS, FLAGPERSONS OR UNIFORMED TRAFFIC CONTROL OFFICERS SHALL BE USED TO ASSIST IN CONTROLLING TRAFFIC. LANE CLOSURE ADVANCE WARNING SIGNS SHALL BE INSTALLED ON ENTRANCE RAMPS.
2. EXIT RAMPS SHALL HAVE TRAFFIC LANES DELINEATED TO INDICATE DESIRED VEHICLE PATH. TAPER LENGTHS SHALL BE AT LEAST 320 FEET. SPACING FOR CHANNELIZING DEVICES SHALL BE 40 FEET, SEE THE "TRAFFIC CONTROL SIGN SUMMARY SHEET FOR RAMPS" FOR ADDITIONAL DETAILS.
3. CHANNELIZING DEVICES SHALL BE WEIGHTED AT THE BASE TO PREVENT OVERTURNING AND KEPT CLEAN.
4. ALL SIGNS WILL BE PLACED BEFORE ANY WORK IS BEGUN OR EQUIPMENT PUT ON ROADWAY. SIGNS SHALL BE COVERED WHEN NOT APPLICABLE.
5. CONTRACTOR SHALL HAVE CHANNELIZING DEVICES AND SIGNS FOR LEFT SIDE CLOSURE AND RIGHT SIDE CLOSURE ON PROJECT BEFORE STARTING PROJECT.
6. WORK CREW, PRIVATE VEHICLES SHALL NOT BE PARKED IN OR AROUND WORKING AREA. CONTRACTOR WILL PROVIDE PARKING FOR WORK CREW VEHICLES OFF PROJECT.
7. UNIFORMED TRAFFIC OFFICERS WILL PARK THEIR VEHICLES ON THE SHOULDER AWAY FROM TRAFFIC.
8. EXISTING SPEED LIMIT SIGNS IN REDUCED SPEED AREA WILL BE COVERED WHEN APPROPRIATE. APPLICATION OF TAPE TO SIGN FACES WILL NOT BE PERMITTED.
9. CHANNELIZING DEVICES OTHER THAN REFLECTORIZED PLASTIC DRUMS WILL BE ALLOWED ALONG TANGENT SECTIONS AS LONG AS THEY CONFORM TO THE M.U.T.C.D. AND ARE APPROVED FOR USE BY THE RESIDENT ENGINEER.
10. REFER TO PROJECT "SPECIAL PROVISIONS" FOR SPEED ZONE ENACTMENT.
11. THE "SPEED LIMIT 40", "DO NOT PASS" AND "END SPEED ZONE" SIGNS SHALL BE LOCATED TO THE LEFT HAND SIDE OF THE ROAD WHEN WORK IS BEING DONE ON THE RIGHT HAND LANE.
12. THE "SPEED LIMIT 40" AND OTHER RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN WORK IS NOT IN PROGRESS.
13. THE FLASHING ARROW SHALL BE MOUNTED ON A BREAKAWAY OR YIELDING SYSTEM. PLACEMENT AT THE START OF THE TAPER IS PREFERRED TO PLACEMENT IN THE MIDDLE OF THE TAPER. THE FLASHING ARROW BOARD SHALL BE EQUIPPED WITH A DIMMER FOR NIGHTTIME USE, AND SHALL BE DIMMED AT NIGHT.
14. "REDUCED SPEED AHEAD" SIGNS MAY BE USED IN LIEU OF "SPEED ZONE AHEAD".
15. WHEN RIGHT HAND LANE IS CLOSED, THE 10' SHOULDER SHALL ALSO BE CLOSED.
16. THE SIGNS "LOW SHOULDER", "BUMP", "MOTORCYCLE" WARNING, "CAUTION PAVEMENT CHANGE" AND "ROUGH ROAD" ARE TO BE USED AND PLACED AS DIRECTED BY THE RESIDENT ENGINEER.
17. ALL FIXED SIGNS SHALL BE MOUNTED ON YIELDING STEEL OR ALUMINUM SUPPORTS AS SHOWN ON STANDARD SHEETS E-24A AND E-25.
18. CENTERLINE PAVEMENT MARKINGS SHALL BE REMOVED THROUGH THE TAPER AND FOR 500 FEET IN ADVANCE OF THE TAPER.



ALL SIGNS SHALL BE REMOVED OR COVERED WHEN NOT NEEDED.

LEGEND

(500) - DENOTES DISTANCE FROM BEGIN TAPER
(E-2) - DENOTES SIGN DETAIL STANDARD SHEET
- FLASHING ARROW PANEL
- CONCRETE MEDIAN BARRIER
- REFLECTORIZED PLASTIC DRUM
- PAVEMENT MARKING REMOVAL

NOT TO SCALE

TD - 18
PREPARED NOV. 1986

REVISIONS	BY

MAINLINE
TRAFFIC CONTROL PLAN
DIVIDED HIGHWAY
ONE LANE CLOSED
(WITH POSITIVE BARRIER PROTECTION)

REVIEWED BY DSP DATE 8/86
TRAFFIC DESIGN SUPERVISOR ____ DATE ____
PROJECT HARTLAND, HARTFORD
SHARON.
SHARON IR-DECK(15)
TRAFFIC SHEET NO. 501 OF 6
SHEET 5 OF 39

5

SECTION 641 TRAFFIC SIGNS SUMMARY SHEET

IDENTIFICATION	NUMBER OF SIGNS	SIZE		TEXT	FOR SIGN DETAIL SEE SHEET NUMBER
		WIDTH	HEIGHT		

COLUMN TOTAL =

IDENTIFICATION	NUMBER OF SIGNS	SIZE		TEXT	FOR SIGN DETAIL SEE SHEET NUMBER
		WIDTH	HEIGHT		
		4'-0"	4'-0"	RAMP PAVING AHEAD	THIS SHEET
		4'-0"	4'-0"		E 6
		4'-0"	4'-0"	LEFT LANE CLOSED AHEAD	E 8
		18"	8"	RIGHT	E 8
		4'-0"	4'-0"	ROAD CONSTRUCTION AHEAD	E 2
		24"	30"	SPEED LIMIT 40	E 158
		4'-6"	4'-0"	EXIT ↗	THIS SHEET

COLUMN TOTAL =

FOR COLOR & MATERIALS SEE STD. E-6

COLOR: REFLECTORIZED WHITE TEXT
REFLECTORIZED GREEN BACKGRND
MATERIAL: FLAT SHEET ALUMINUM - .100 THICK

SIGN NOTES:

TRAFFIC SIGNS SHOWN ON THIS SHEET ARE TO BE SUBSIDIARY TO ITEM 641, TRAFFIC CONTROL.

ADDITIONAL SIGNS, IF REQUIRED, THAT ARE NOT DETAILED WILL BE SUBSIDIARY TO ITEM 641.10, USE AS DIRECTED BY THE ENGINEER.

PROJECT SIGNS AS PER STANDARD E-2 AND E-6 WILL BE REQUIRED TO ESTABLISH PROJECT LIMITS AND AS RAMP SIGNING.

SIGNS SHALL BE ERECTED ON FLANGED CHANNEL STEEL POSTS,* UNLESS NOTED OTHERWISE.

* MAXIMUM SIZE = 3 LBS/FT.

THE EXIT SIGN SHALL MOUNTED ON A YIELDING OR BREAKAWAY TYPE SUPPORT. A MINIMUM DISTANCE OF 6 FT. SHALL BE PROVIDED FROM THE BOTTOM OF THE SIGN TO THE ROAD SURFACE. DRILLING OF THE PAVEMENT WILL BE PERMITTED FOR PLACEMENT OF YIELDING SIGN POSTS ONLY FOR LONG TERM INSTALLATIONS.

THIS DETAIL IS TO BE USED WITH THE SIGN ON THE "MAINLINE TRAFFIC CONTROL SHEET".

TRAFFIC CONTROL FOR LANE CLOSURE IN THE VICINITY OF A RAMP.
40 MPH SPEED LIMIT POSTED

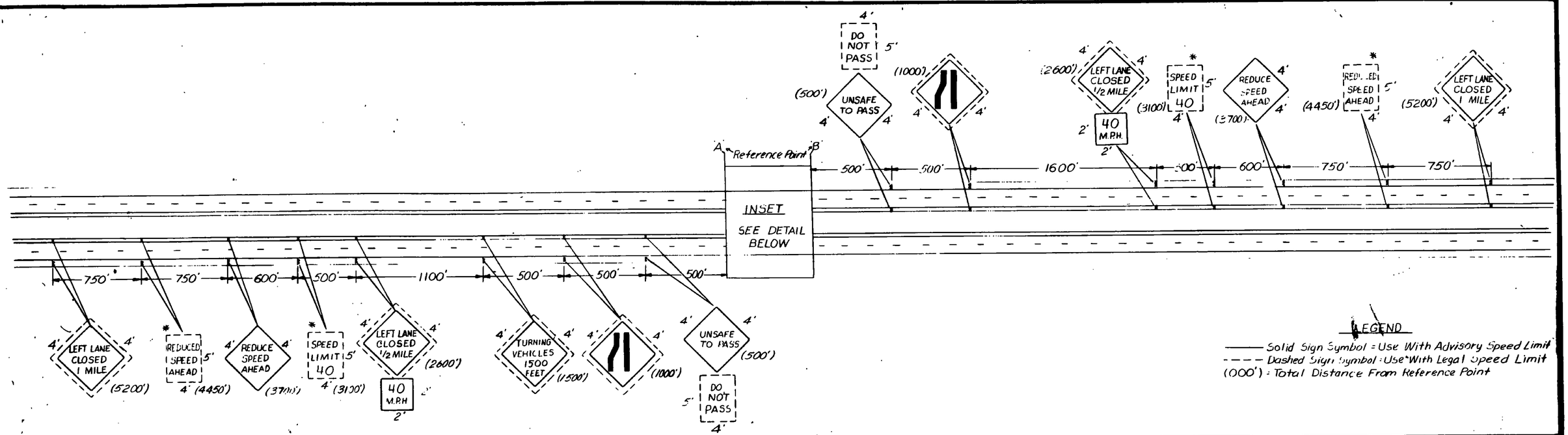
INTERCHANGE SIGNING (TYPICAL)

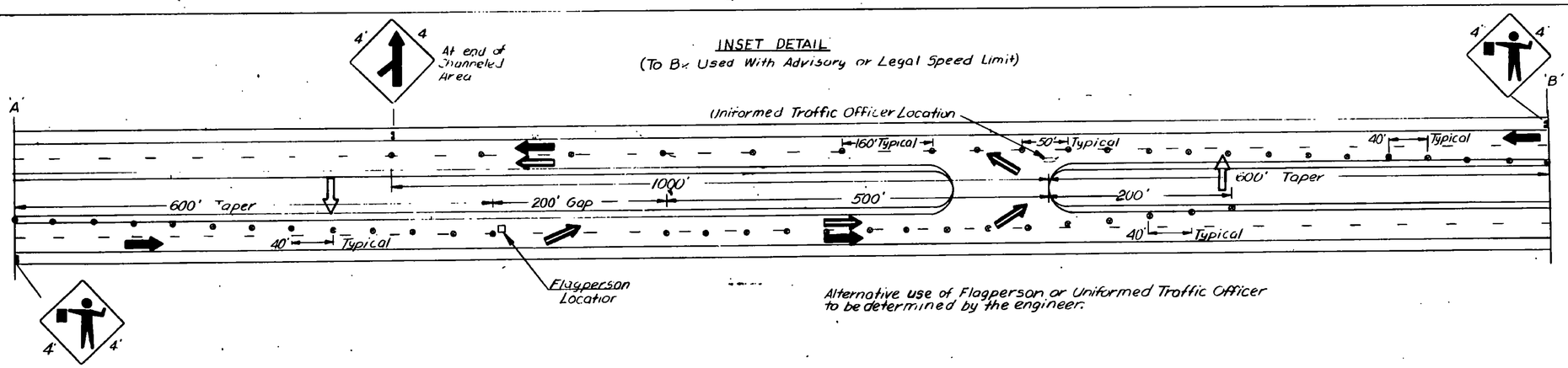
DELETE RAMP PAVING SIGNS, IF NOT REQUIRED.

REV. 11/11/84

TRAFFIC CONTROL SIGN
SUMMARY SHEET
FOR RAMPS

SURVEYED BY ______________ DATE ______
DRAWN BY ______________ DATE ______
TRACED BY ______________ DATE ______
HARTLAND, HARTFORD, SHARON
SHARON IR-DECK (15)
PROJ. NO.
TRAFFIC SHEET NO. 502 SHEET 6 OF 39





* Legal Speed Limit Reductions must be approved by the STATE TRAFFIC COMMITTEE prior to sign erection. Requests may be made prior to the Preconstruction Conference.

When signing for this operation interferes with that for work on the mainline, revisions may be made. The Resident Engineer will establish the appropriate sign requirements.

LEGEND
= Through Traffic
= Construction Vehicles
= Channelizing Device
= FLASHING ARROW PANEL
NOT TO SCALE

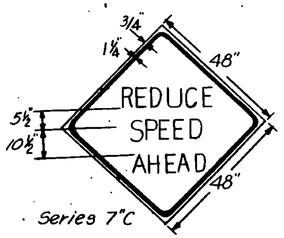
DATUM
VERTICAL
HORIZONTAL

DATE 7/17/85
FLASHING PANEL

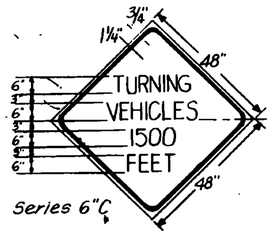
TRAFFIC CONTROL
TYPICAL
FOR
CONSTRUCTION VEHICLE
TURNING

SURVEYED BY ____ DATE ____
DRAWN BY IB DATE 3-15-
TRACED BY ____ DATE ____
HARTLAND, HARTFORD
SHARON I-84-DECK-(15)
PROJ. NO.
TRAFFIC SHEET NO. 23 SHEET 7 OF 9

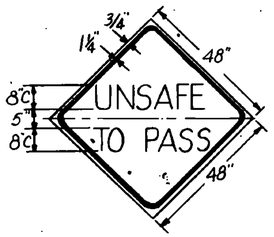
SECTION — TRAFFIC SIGN SUMMARY SHEET



Series 7"C



Series 6"C



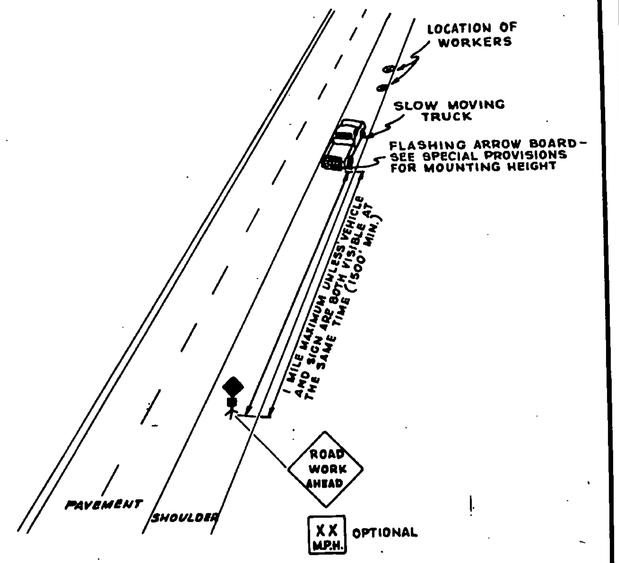
	IDENTIFICATION	NUMBER OF SIGNS	SIZE WIDTH	SIZE HEIGHT	TEXT					FOR SIGN DETAIL SEE STANDARD OR SHEET NUMBER
		4	4	4	LEFT / RIGHT LANE CLOSED 1 MILE					E-8
		4	4	4	LEFT / RIGHT LANE CLOSED 1/2 MILE					E-8
		1	4	4	TURNING VEHICLES 1500 FEET					THIS SHEET
		2	4	4						E-8
		2	4	4						E-6
		1	4	4						E-19
ADVISORY		2	4	4	REDUCE SPEED AHEAD					THIS SHEET
		2	2	2	40 MPH					E-8
		4	4	4	UNSAFE TO PASS					THIS SHEET
LEGAL		2	4	5	REDUCED SPEED AHEAD					THIS SHEET
		2	4	5	SPEED LIMIT 40					E-15B
		2	4	5	DO NOT PASS					E-15A

BORDER & LEGEND - BLACK (NON-REFL.)
BACKGROUND - ORANGE (REFL.- HIGH INT.)
FOR MATERIAL SPECS, SEE STD. E-8
(APPLIES TO ALL SIGN DETAILS ABOVE)

SIGN NOTES: THESE SIGNS ARE SUBSIDIARY TO OTHER ITEMS. ADDITIONAL SIGNS AND SIGN POSTS, IF REQUIRED BY THE ENGINEER, SHALL ALSO BE SUBSIDIARY TO OTHER ITEMS.

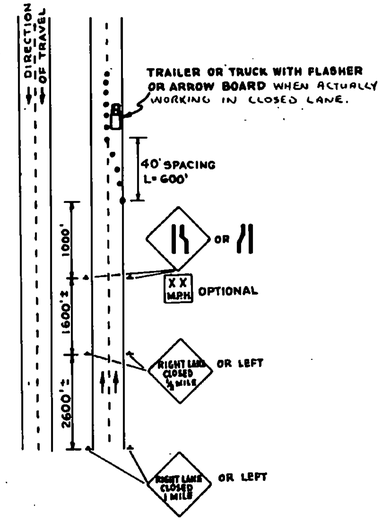
SIGNS SHALL BE ERECTED ON FLANGED CHANNEL STEEL POSTS.* AT LEAST 6 FEET OUTSIDE THE SHOULDER POINT OR 2 FEET OUTSIDE GUARD RAIL. SIGNS FOR TEMPOARY USE MAY BE MOUNTED ON APPROVED PORTABLE SUPPORTS, THE SIGN SHALL BE MOUNTED SO THAT THE BOTTOM OF THE SIGN WILL BE AT LEAST 1 FOOT ABOVE ROAD LEVEL. THE INSTALLATION AND MAINTENCE OF ALL SIGNS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

* 3 LBS./FT - MAXIMUM



MOVING OPERATION LANE CLOSURE
(Delineator Placement)

When delineators are being placed adjacent to the 4' shoulder the operation must be additionally protected by the standard "LEFT LANE CLOSED" sign package. The Contractor may elect to perform such work when the left lane is closed for other purposes.

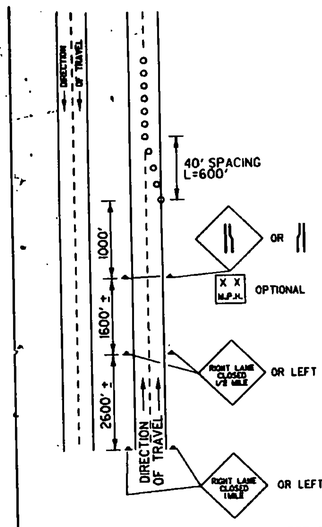


Typical application - daytime maintenance operations of short duration on a four-lane divided roadway where one lane is closed. To be used for bridge work where concern for legal speed zone signing is not a problem (low volume - adequate sight distance).

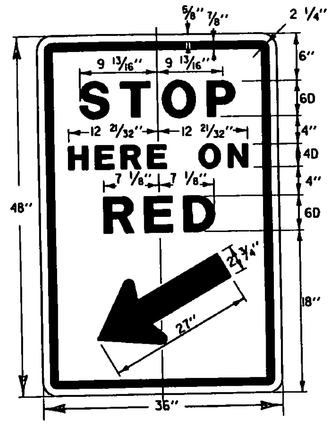
SIGN SUMMARY

CONST. VEHICLE TURNING

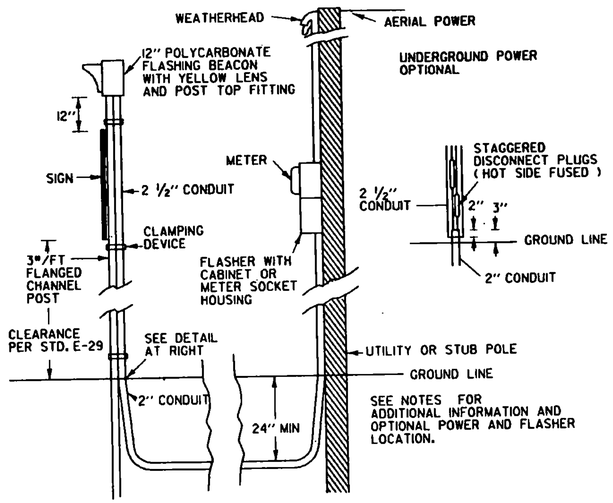
SURVEYED BY _____ DATE _____
DRAWN BY _____ DATE 5/1/85
TRACED BY _____ DATE _____
HARTLAND, HARTFORD
SHARON I-R-DECK (15)
PROJ. NO.
TRAFFIC SHEET NO. 504 SHEET 8 OF 22



TRAFFIC CONTROL FOR A HIGHWAY UNDER BRIDGE WORK, WHERE DEBRIS 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		
INTERVAL	1	2	3	4	5	6
MINIMUM	12			12		
EXTENSION	2			2		
MAXIMUM	20	3	24	20	3	24
HEAD A	G	Y	R	R	R	R
HEAD B	R	R	R	G	Y	R

BR 58A US5

1.) STOP BARS SHALL BE PLACED SO AS TO NOT ALLOW STOPPED VEHICLES TO BLOCK RAMPA AND RAMPC TRAFFIC THAT IS ENTERING WITH A LEFT TURN.

2.) THE SIGNAL SYSTEM SHALL BE FULLY ACTUATED.

3.) SIGNAL TIMING IS APPROXIMATE AND SHALL BE ADJUSTED TO ACCOMMODATE AM AND PM PEAK FLOWS

4.) OU PROJECT SIGNS PER STD. E-6 AND PLAN SHEET 5 OF 39. THIS SIGNING IS SUBSIDIARY TO ITEM 527.10.

GENERAL

TEMPORARY TRAFFIC SIGNAL NOTES

1.) THE CONTRACTOR SHALL INSURE THAT THE SIGNAL INSTALLATION CONFORMS TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES WITH THE SUPPORTING STRUCTURES AS PER AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, CERTIFICATION SHALL NOT BE NECESSARY FOR TEMPORARY TRAFFIC SIGNAL EQUIPMENT.

2.) 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 10 MPH, THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.

3.) SIGNAL FACES SHALL CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN)

4.) THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16 1/2 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.

5.) SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.

6.) SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY 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 1/2 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.

7.) SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.

8.) 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.

9.) THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE INDUCTANCE. THE CONTROLLER, VEHICLE DETECTORS AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.

10.) VEHICLE DETECTOR LOOPS SHALL BE 4' x 30' FOR PRESENCE DETECTION AT THE STOP BAR WITH THE NEAR PORTION LOCATED 5 FEET BEHIND THE STOP BAR. A 6' x 6' EXTENDED CALL DETECTOR SHALL BE PROVIDED IF REQUIRED IN THE SPECIAL NOTES. LOCATE 350' FROM STOP BAR, OR AS NOTED, FOR DILEMMA ZONE PROTECTION.

11.) ON SEMI-ACTUATED SIGNALS, PARTICULARLY WITH LONG BRIDGES, THE CONTROLLER SHOULD BE LOCATED ON THE SAME SIDE OF THE BRIDGE AS THE LOOP.

12.) INTERVAL TIMING SHOWN IN SECONDS.

13.) INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT.

14.) PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.

15.) 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.

16.) 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 PAVMENT MARKINGS, UTILITY POLES, WIRES, ETC.

17.) 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.

18.) STOP BARS SHALL BE LOCATED A MINIMUM OF 40' AND A MAXIMUM OF 120' FROM THE NEAREST SIGNAL HEAD.

19.) PAYMENT FOR TEMPORARY VEHICLE DETECTOR LOOP(S) SHALL BE LINEAR FOOT OF SAWSLOT IN THE PAVEMENT ITEM 678.22 (MODIFIED).

20.) TEMPORARY PAVEMENT MARKINGS (AND REMOVALS) AND SIGNING AS SUBSIDIARY TO THE ITEM 678.15, TRAFFIC CONTROL SIGNALS, (STOP BARS, "STOP HERE ON RED", "SIGNAL AHEAD", "NO PASSING ZONE").

21.) SEE THIS SHEET FOR "STOP HERE ON RED" SIGN DETAIL AND E-19B FOR "SIGNAL AHEAD" SYMBOL SIGN, THE "SIGNAL AHEAD" SIGN SHALL HAVE AN ORANGE BACKGROUND (REFLECTORIZED). SEE STANDARD E-29 FOR SIGN PLACEMENT. SEE STANDARD E-36 FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS.

22.) 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. PVMT. MARKINGS SHALL BE CONSIDERED AS SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.

23.) THE "NO PASSING" SIGN SHALL BE USED TO PREVENT PASSING FOR 750' IN ADVANCE OF THE STOP BAR. THE SIGN SHALL BE PER STANDARD E-19B, EXCEPT THE COLOR SHALL BE A BLACK TEXT AND BORDER ON A REFLECTORIZED ORANGE BACKGROUND.

24.) ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND STATE INSPECTOR.

25.) TWO-WAY TRAFFIC SHALL BE MAINTAINED ON THE DETOUR WHENEVER POSSIBLE. DURING TWO-WAY TRAFFIC, THE SIGNALS SHALL BE SET ON FLASHING YELLOW.

26.) APPROACH WIDTHS SHALL BE AS DETAILED IN SECTION 638.04(3) TO MINIMIZE VEHICLE DELAY.

27.) AN ADVANCED CONSTRUCTION WARNING SIGN PACKAGE SHALL BE PROVIDED ON EACH APPROACH PER STANDARD E-2. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, TUBULAR MARKERS, TYPE III BARRICADES, ETC. SHALL BE PAID AS A PART OF "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS" - ITEM 527.10 OR "TRAFFIC CONTROL" - ITEM 641.10.

FLASHING BEACON NOTES

A.) 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 KNOCKDOWN. EACH INSTALLATION SHALL BE GROUNDED.

B.) AT THE CONTRACTOR'S OPTION:

A. THE POWER SUPPLY MAY BE AERIAL OR UNDERGROUND

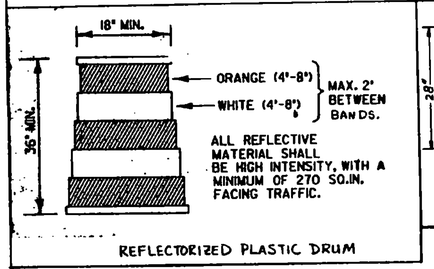
B. POWER MAY BE COMBINED WITH THE TRAFFIC SIGNAL OR SEPARATE.

C. 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.

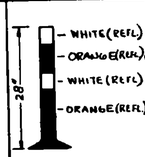
C.) THE FLASHER UNIT SHALL BE ONE CIRCUIT AND INCLUDE A RADIO INTERFERENCE FILTER.

D.) THE FLASHING BEACON INSTALLATION SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.

E.) BATTERY OPERATED FLASHERS SHALL NOT BE ALLOWED.



REFLECTORIZED PLASTIC DRUM



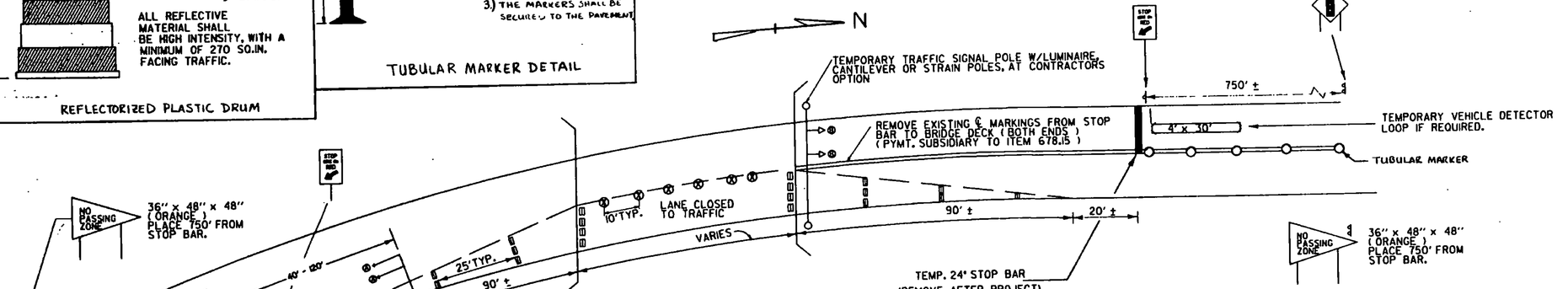
1.) ALL REFLECTIVE MATERIAL SHALL BE HIGH INTENSITY.

2.) THE MARKERS SHALL BE MADE TO WITHSTAND THE IMPACT OF VEHICLES WITHOUT DAMAGE TO THE MARKER OR THE VEHICLE

3.) THE MARKERS SHALL BE SECURED TO THE PAVEMENT

TUBULAR MARKER DETAIL

ALL SIGNAL RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN THE SIGNAL IS NOT OPERATING.



NOT TO SCALE

TD-2A

ORIGINAL PREPARED NOV. 1986		
DATE	REVISIONS	BY

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 1:11 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)

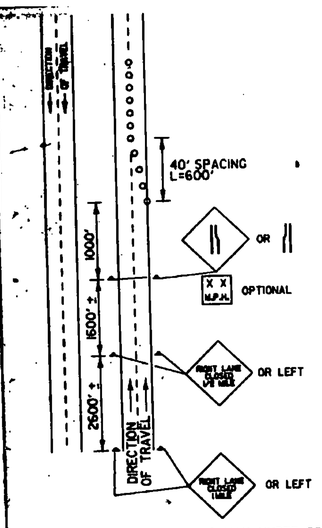
ITEM LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.

ONE-WAY TEMPORARY TRAFFIC SIGNAL DETAIL

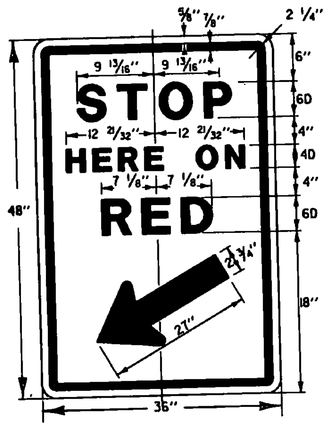
BRIDGE NO. 58A (US5)

PREPARED BY DAR DATE
CHECKED BY DSP DATE 12/96
DESIGN SUPERVISOR DATE
PROJ. HARTLAND, HARTFORD, SHARON I R DECK (15)
TRAFFIC SHEET NO. 505
SHEET 9 OF 39 SHEETS

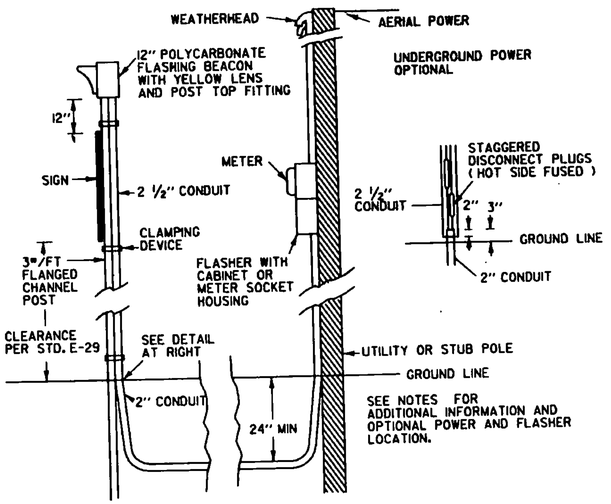
9



TRAFFIC CONTROL FOR A HIGHWAY UNDER BRIDGE WORK, WHERE DEBRIS 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 (EASTBOUND APPROACH)

PHASING DIAGRAM AND SPECIAL NOTES

FOR EACH LOCATION

SIGNAL PHASING DIAGRAM

PHASE	A			B		
INTERVAL	1	2	3	4	5	6
MINIMUM	12			12		
EXTENSION	2			2.5		
MAXIMUM	25	3	27	25	3	27
HEAD A	G	Y	R	R	R	R
HEAD B	R	R	R	G	Y	R
SIGNAL SHALL DWELL ON PHASE B.	←					

BR. 65A US4

1.) TIMINGS ARE APPROXIMATE AND SHALL BE ADJUSTED TO ACCOMMODATE AM AND PM PEAK FLOWS.
2.) SIGNAL SYSTEM TO BE FULLY ACTUATED WITH ADVANCE DETECTION USED ON THE EASTBOUND APPROACH.
3.) USE FLASHING WARNING BEACON ON THE EASTBOUND APPROACH.
4.) ON PROJECT SIGNS PER STD. E-6 AND PLAN SHEET 5 OF 39. PAYMENT SUBSIDIARY TO ITEM 527.10.

TEMPORARY TRAFFIC SIGNAL NOTES

1.) THE CONTRACTOR SHALL INSURE THAT THE SIGNAL INSTALLATION CONFORMS TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES WITH THE SUPPORTING STRUCTURES AS PER AASHTO'S STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS. CERTIFICATION SHALL NOT BE NECESSARY FOR TEMPORARY TRAFFIC SIGNAL EQUIPMENT.
2.) 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 10 MPH. THE RESIDENT ENGINEER SHALL MAKE SEVERAL TRIAL RUNS TO DETERMINE THE PROPER ALL-RED CLEARANCE INTERVAL.
3.) SIGNAL FACES SHALL CONSIST OF 12" LENSES. (RED, YELLOW, AND GREEN)
4.) THE BOTTOM OF THE HOUSING OF A SIGNAL FACE SUSPENDED OVER A ROADWAY SHALL NOT BE LESS THAN 16 ½ 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.
5.) SIGNAL FACES FOR ANY ONE APPROACH SHALL NOT BE LESS THAN 8 FEET APART MEASURED HORIZONTALLY BETWEEN CENTER OF FACES.
6.) SIGNAL HEADS MAY BE HUNG ON A SPAN WIRE OR ON A CANTILEVER MAST ARM. AT LEAST ONE SIGNAL HEAD SHALL BE UNMISTAKABLY 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 1/2 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.
7.) SIGNAL HEAD PLACEMENT IS CRITICAL. HEADS SHALL BE ADJUSTED TO REFLECT LANE LOCATION CHANGES.
8.) 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.
9.) THE CONTRACTOR SHALL PROVIDE AN ACTUATED CONTROLLER. THE APPROACHES NOTED SHALL HAVE A TEMPORARY VEHICLE DETECTOR. THE TYPE OF DETECTION SHALL BE INDUCTANCE. THE CONTROLLER, VEHICLE DETECTORS AND ALL OTHER SIGNAL EQUIPMENT SHALL MEET OR EXCEED ALL NEMA STANDARDS.
10.) VEHICLE DETECTOR LOOPS SHALL BE 4' x 30' FOR PRESENCE DETECTION AT THE STOP BAR WITH THE REAR PORTION LOCATED 5 FEET BEHIND THE STOP BAR. A 6' x 6' EXTENDED CALL DETECTOR SHALL BE PROVIDED IF REQUIRED IN THE SPECIAL NOTES. LOCATE 350' FROM STOP BAR, OR AS NOTED, FOR DILEMMA ZONE PROTECTION.
11.) ON SEMI-ACTUATED SIGNALS, PARTICULARLY WITH LONG BRIDGES, THE CONTROLLER SHOULD BE LOCATED ON THE SAME SIDE OF THE BRIDGE AS THE LOOP.
12.) INTERVAL TIMING SHOWN IN SECONDS.
13.) INTERCONNECT BETWEEN SIGNAL POLES BY WHATEVER MEANS POSSIBLE OR CONVENIENT.
14.) PLACE TEMPORARY POLES BEHIND GUARDRAIL WHERE POSSIBLE.
15.) 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.
16.) 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 PAVMENT MARKINGS, UTILITY POLES, WIRES, ETC.
17.) 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.
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19.) PAYMENT FOR TEMPORARY VEHICLE DETECTOR LOOP(S) SHALL BE LINEAR FOOT OF SAWSLOT IN THE PAVEMENT ITEM 678.22 (MODIFIED).
20.) TEMPORARY PAVEMENT MARKINGS (AND REMOVALS) AND SIGNING AS SUBSIDIARY TO THE ITEM 678.15, TRAFFIC CONTROL SIGNALS, (STOP BARS, "STOP HERE ON RED", "SIGNAL AHEAD", "NO PASSING ZONE").
21.) SEE THIS SHEET FOR "STOP HERE ON RED" SIGN DETAIL AND E-19B FOR "SIGNAL AHEAD" SYMBOL SIGN. THE "SIGNAL AHEAD" SIGN SHALL HAVE AN ORANGE BACKGROUND (REFLECTORIZED). SEE STANDARD E-29 FOR SIGN PLACEMENT. SEE STANDARD E-36 FOR ADDITIONAL INFORMATION ON SIGNALS AND DETECTORS.
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25.) TWO-WAY TRAFFIC SHALL BE MAINTAINED ON THE DETOUR WHENEVER POSSIBLE. DURING TWO-WAY TRAFFIC, THE SIGNALS SHALL BE SET ON FLASHING YELLOW.
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27.) AN ADVANCED CONSTRUCTION WARNING SIGN PACKAGE SHALL BE PROVIDED ON EACH APPROACH PER STANDARD E-2. PAYMENT FOR THESE SIGNS, THE REFLECTORIZED PLASTIC DRUMS, TUBULAR MARKERS, TYPE III BARRICADES, ETC. SHALL BE PAID AS A PART OF "MAINTENANCE OF TRAFFIC FOR BRIDGE PROJECTS" - ITEM 527.10 OR "TRAFFIC CONTROL" - ITEM 641.10.

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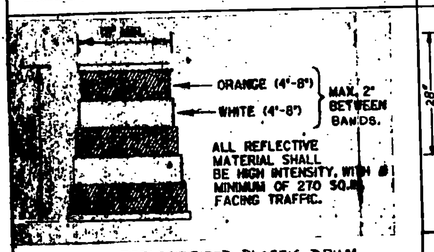
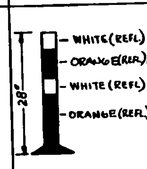
B.) AT THE CONTRACTOR'S OPTION
   A. THE POWER SUPPLY MAY BE AERIAL OR UNDERGROUND
   B. POWER MAY BE COMBINED WITH THE TRAFFIC SIGNAL OR SEPARATE.
   C. THE FLASHER MAY BE INSTALLED ON A STUB POLE NEAR THE SIGN, ON A UTILITY POLE (WITH UTILITY COMPANY APPROVAL) OR AT THE SAME LOCATION AS THE TRAFFIC SIGNAL CONTROLLER.
C.) THE FLASHER UNIT SHALL BE ONE CIRCUIT AND INCLUDE A RADIO INTERFERENCE FILTER.
D.) THE FLASHING BEACON INSTALLATION SHALL BE SUBSIDIARY TO THE TRAFFIC SIGNAL ITEM.
E.) BATTERY OPERATED FLASHERS SHALL NOT BE ALLOWED.



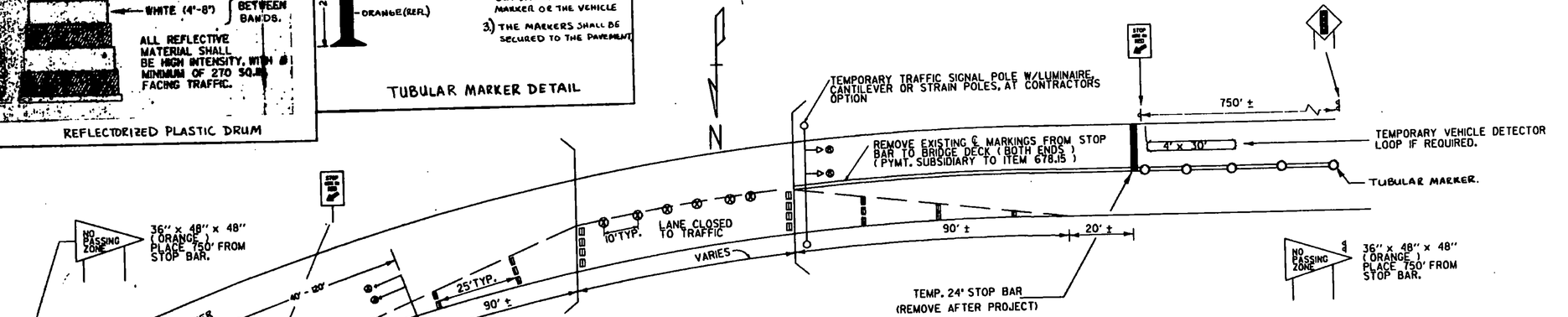
REFLECTORIZED PLASTIC DRUM



1.) ALL REFLECTIVE MATERIAL SHALL BE HIGH INTENSITY.
2.) THE MARKERS SHALL BE MADE TO WITHSTAND THE IMPACT OF VEHICLES WITHOUT DAMAGE TO THE MARKER OR THE VEHICLE
3.) THE MARKERS SHALL BE SECURED TO THE PAVEMENT

TUBULAR MARKER DETAIL

ALL SIGNAL RELATED SIGNS SHALL BE REMOVED OR COVERED WHEN THE SIGNAL IS NOT OPERATING.



NOT TO SCALE

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LEGEND

○ — SURFACE MOUNTED FLEXIBLE TUBULAR MARKER
⊗ — REFLECTORIZED PLASTIC DRUMS
Ⅲ — TYPE III BARRICADES (SEE STD. E-7A)

ITEM LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONFIRM ANY MEASUREMENTS IN THE FIELD.

TD-2A

ORIGINAL PREPARED NOV. 1986		
DATE	REVISIONS	BY

ONE-WAY TEMPORARY TRAFFIC SIGNAL DETAIL

BRIDGE NO. 65A-US4

PREPARED BY DAR DATE
CHECKED BY DSP DATE 12/86
DESIGN SUPERVISOR DATE
PROJ. HARTLAND, HARTFORD, SHARON IR-DECK (15)S
TRAFFIC SHEET NO. 606
SHEET 10 OF 39 SHEETS

10

Joint Sealer, Hot Poured
3/4"
1/2"
1" 2ND COURSE
1/4"
Jute or Oakum, To be Subsidiary to the Item, "JOINT SEALER, HOT POURED."
1/2" Deep Saw Cut In 1st Course of Pavement.
DETAIL "A"
Scale 1" = 1'
1
See DETAIL "A"
Bit Conc Pav't
Recessed 1/4" Max.
Existing Chamfer (If this edge needs repairing use edging tool to finish corner.)
Sheet Membrane Waterproofing
6"
2'-0
JOINT SEALER DETAIL WITHOUT SURFACE APPROACH SLAB
Scale 1 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.
ITEM 519.20 SHEET MEMBRANE WATERPROOFING
SEE DETAIL A, THIS SHEET
ITEM 406.25, TYPE IV
ITEM 406.25, TYPE IV
1/8" - 1/4"
BACKING MATERIAL SUBSIDIARY TO ITEM 622.10
DEPRESS MEMBRANE INTO JOINTS; RUN CONTINUOUS OVER PIER & ABUTMENT JOINTS
ITEM 622.10 1" INSULATION BOARD
(Backing material to be extruded polystyrene board.)
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.
SEE DETAIL A & B THIS SHEET
ITEM 406.25 TYPE IV
ITEM 519.20 SHEET MEMBRANE WATERPROOFING
2'-0
LIMIT OF ITEM 519.20
ITEM 406.25 TYPE IV
APPROACH SLAB
1" DEEP SAW CUT (TYP.)
DECK SLAB
1" INSULATION BOARD, ITEM 622.10, TO REPLACE CORK AS DIRECTED BY THE ENGINEER.
REPLACE LOOSE AND SPALLED CONCRETE AS DIRECTED BY THE ENGINEER. (ITEM 529.25 MOD.)
ABUTMENT
TYPICAL ABUTMENT JOINT DETAIL (WITH SURFACE APPROACH SLAB)
NTS
N.I.C.
2
Bituminous concrete pavement
Sheet membrane waterproofing
See Details A and B on this Sheet
Existing 9" wide (20 oz.) copper supports for expansion material. Supports on 2'-0" centers.
1" DEEP SAW CUT
Item 622.10, 1" Insulation Board to replace existing cork as directed by the Engineer
~ Concrete deck ~
Replace loose and spalled concrete under Item 529.25 (Mod.) as directed by the Engineer
Pier Joint
TYPICAL PIER JOINT DETAIL
NTS
N.I.C.
ITEM 524.20, POLYURETHANE JOINT SEALER
1/2" (TYP.)
ITEM 406.25
ITEM 519.20
BACKING MATERIAL SUBSIDIARY TO ITEM 524.20
SECTION C - C
Joints to be raked out to a depth of 2" and repointed with Mortar, Type I (All labor and material required to perform this operation shall be subsidiary to all other items in the contract.)
Existing granite curb
2"
2"
Bituminous concrete pavement
REPLACE LOOSE AND SPALLED CONCRETE AS DIRECTED BY THE ENGINEER, USING ITEM 529.25 MOD.
1" DEEP SAW CUT
C
C
CURB JOINT
FACE OF CURB
FASCIA
PLAN VIEW
CURB JOINT DETAIL
NTS
3
SEE DETAIL A THIS SHEET
ITEM 406.25
ITEM 519.20
1/4"
2 3/4"
1/4"
1"
ITEM 524.15
REPLACE LOOSE AND SPALLED CONCRETE AS DIRECTED BY THE ENGINEER, USING ITEM 529.25 MOD.
2'-0"
LIMITS OF ITEM 519.20
1" DEEP SAW CUT
ITEM 406.25
ITEM 519.20
APPROACH SLAB
DECK SLAB
ABUTMENT
COMPRESSION SEAL DETAILS
NTS
2"
2 ± 1/8"
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.
4
Varies
Varies
Item 524.15
1
1/2" (Typ.)
Backing Material to be closed cell polyethylene foam (707.09) (Subsidiary to Item 524.15.)
1
SECTION 1-1
CURB JOINT DETAIL A
NTS
5

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of HARTLAND, HARTFORD, SHARON	Bridge No. —
	Log Sta. —
Highway No.	Surv. Sta. —

TYPICAL DETAILS

Designed By G. Rogers	Drawn By G. Schelley/D. New[illegible]
Checked By G Rogers Date 7/86	Bridge Design Supervisor F.W. Bolkum Date 8/[illegible]
Project HARTLAND, HARTFORD, SHARON	Project No. IR-DECK(1[illegible])

USAR 30 33 DECKREHAB

Sheet 11 of 58

BR-6

11

SPECIFIC NOTES

BR 58A US5 over I91

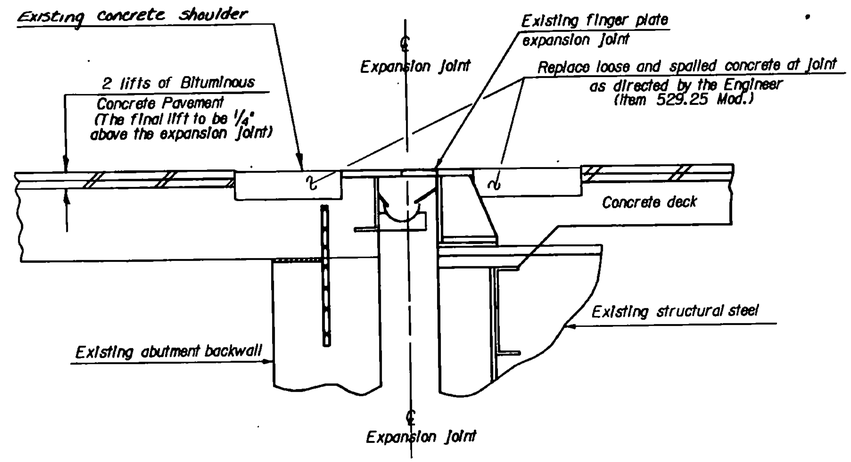
1. THERE ARE NO SCUPPERS ON THIS BRIDGE.
2. ALL WEEP PIPES SHALL BE SEALED OVER WITH SHEET MEMBRANE WATERPROOFING.
3. REPAIR COMPRESSION SEALS AT THE SOUTH END OF THE BRIDGE AND IN THE CURBS AT THE PIERS, AS DETERMINED BY THE ENGINEER, IN ACCORDANCE WITH DETAILS 4 AND 5 ON SHEET 11. THE WIDTH OF THE REPLACEMENT COMPRESSION SEAL 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 PROVIDED THEY MEET THE SPECIFICATIONS FOR ITEM 524.15.
4. THE CONCRETE SHOULDERS AT THE CURBS ARE APPROXIMATELY 2 FEET WIDE AND ARE IN GOOD CONDITION. THEY WILL BE REPAIRED, IF REQUIRED, AS DETERMINED BY THE ENGINEER. THE SHEET MEMBRANE SHALL BE PLACED AGAINST THESE SHOULDERS AS DIRECTED BY THE ENGINEER.
5. THE CONCRETE SHOULDERS AT THE EXPANSION DAM SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID UNDER THE ITEM "REMOVAL OF CONCRETE OR MASONRY (MOD.)". (See Detail 5, This Sheet.)
6. THE FINAL LIFT OF PAVEMENT SHALL BE 1/4 INCH HIGHER THAN THE TOP OF THE CONCRETE SHOULDERS AT THE FINGER PLATE JOINTS. CARE SHALL BE USED DURING PAVING OPERATIONS TO MAKE SURE NO BITUMINOUS MATERIAL BECOMES LODGED IN THE EXPANSION JOINTS NOR ENTERS THE DRAIN TROUGHS.
7. THIS BRIDGE DECK IS TO BE PAVED CONCRETE SHOULDER TO CONCRETE SHOULDER WITH 1 3/4 INCH +/- BITUMINOUS CONCRETE PAVEMENT IN TWO (2) COURSES. THE BOTTOM COURSE SHALL BE 3/4 INCH +/- OF TYPE IV MIX AND THE TOP COURSE SHALL BE 1 INCH +/- OF TYPE IV MIX. THE TOTAL THICKNESS AND THICKNESS OF EACH OF THE COURSES SHALL BE DETERMINED BY THE ENGINEER.
8. DETAIL 2, SHEET 11, DOES NOT APPLY TO THIS STRUCTURE.
9. THE FOLLOWING GENERAL NOTES DO NOT APPLY TO THIS STRUCTURE: NOS. 28, 29 AND 30.

BR. 15 N & S I89 OVER 128

1. THERE ARE NO SCUPPERS ON THESE BRIDGES.
2. ALL WEEP PIPES SHALL BE SEALED OVER WITH SHEET MEMBRANE WATERPROOFING.
3. REPAIR COMPRESSION SEALS AT THE ENDS OF THESE BRIDGES AND IN THE CURBS AT THE PIERS, AS DETERMINED BY THE ENGINEER, IN ACCORDANCE WITH DETAILS 4 AND 5 ON SHEET 11. 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 PROVIDED THEY MEET THE SPECIFICATIONS FOR ITEM 524.15.
4. THE EXISTING METAL PLATES IN THE EXPANSION JOINTS AT THE PIERS SHALL BE STRAIGHTENED AS REQUIRED AND NEW CONCRETE SHOULDERS ADDED AS SHOWN IN DETAIL 4, ON SHEET 12. NO WORK OTHER THAN THAT SHOWN SHALL BE DONE ON THE METAL PLATE EXPANSION JOINTS UNLESS THE ENGINEER CONTACTS THE STRUCTURES DIVISION.
5. BRIDGE 15N CURRENTLY HAS CYBOND 2501 POLYESTER RESIN SYSTEM ON THE DECK WHICH WAS APPLIED IN AUGUST OF 1988 AND BRIDGE 15S HAS RS-1 ASPHALT EMULSION WHICH WAS APPLIED IN SEPTEMBER OF 1988. THESE SYSTEMS ARE PERFORMING WELL WITH AVERAGE READING OF 4% OF THE AREA INDICATING CORROSION READINGS OF 0.35 VOLTS OR GREATER. CARE SHALL BE USED WHEN REMOVING THE EXISTING PAVEMENT (WHICH IS IN POOR CONDITION) TO MINIMIZE DAMAGE TO THE PROTECTIVE COATING SYSTEM AND RETAIN IT AS INTACT AS POSSIBLE. THE NEW SHEET MEMBRANE WATERPROOFING WILL BE APPLIED DIRECTLY ON THE EXISTING SYSTEM AS DIRECTED BY THE ENGINEER.
6. BECAUSE OF LOW CORROSION READING, IT IS EXPECTED THAT THERE WILL BE LITTLE OR NO CONCRETE REPAIR REQUIRED. HOWEVER, 1 SQUARE YARD OF BOTH PREPARATION OF CONCRETE SURFACES, CLASS I AND CLASS II AND 100 LBS. OF REINFORCING STEEL HAVE BEEN ADDED TO THE QUANTITIES. THE ACTUAL AMOUNT REQUIRED WILL BE AS DETERMINED BY THE ENGINEER. THE QUANTITY SHOWN FOR REMOVAL OF CONCRETE OR MASONRY IS BASED ON ESTIMATED WORK REQUIRED AT THE METAL PLATE JOINTS.
7. THE FINAL LIFT OF PAVEMENT SHALL BE 1/4 INCH HIGHER THAN THE TOP OF THE NEW CONCRETE SHOULDERS AT THE JOINTS. CARE SHALL BE USED DURING PAVING OPERATIONS TO MAKE SURE NO BITUMINOUS MATERIAL BECOMES LODGED IN THE EXPANSION JOINT NOR ENTERS THE DRAIN TROUGHS.
8. THESE BRIDGE DECKS ARE TO BE PAVED CURB TO CURB WITH 2 1/2 INCHES +/- OF BITUMINOUS CONCRETE PAVEMENT IN TWO COURSES. THE FIRST COURSE SHALL BE 1 1/4 INCH +/- OF TYPE IV MIX AND THE TOP COURSE SHALL BE 1 1/4 INCH +/- OF TYPE IV MIX. THE TOTAL THICKNESS AND THE THICKNESS OF EACH COURSE SHALL BE DETERMINED BY THE ENGINEER.
9. DETAIL 2, SHEET 11, DOES NOT APPLY TO THESE STRUCTURES.
10. THE FOLLOWING GENERAL NOTES DO NOT APPLY TO THESE STRUCTURES: NOS. 28, 29 AND 30.

B 63A - US 4 OVER I 89

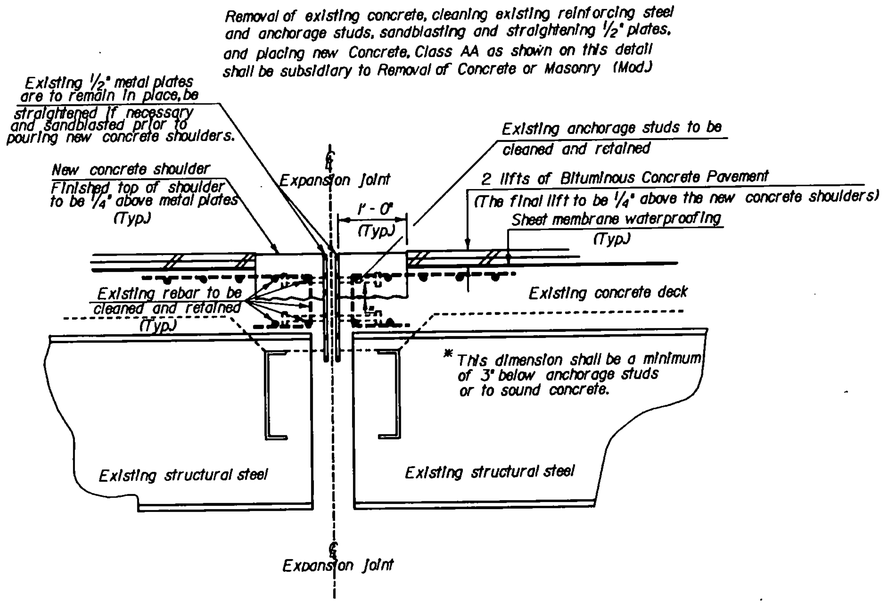
1. THERE ARE NO SCUPPERS ON THIS BRIDGE.
2. ALL WEEP PIPES SHALL BE SEALED OVER WITH SHEET MEMBRANE WATERPROOFING.
3. REPAIR COMPRESSION SEALS AT THE ENDS OF THE BRIDGE AND IN THE CURBS AT THE PIERS, AS DETERMINED BY THE ENGINEER, IN ACCORDANCE WITH DETAILS 4 AND 5 ON SHEET 11. THE WIDTH OF THE REPLACEMENT 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 PROVIDED THEY MEET THE SPECIFICATIONS FOR ITEM 524.15.
4. THE EXISTING METAL PLATES IN THE EXPANSION JOINTS AT THE PIERS SHALL BE STRAIGHTENED AS REQUIRED AND NEW CONCRETE SHOULDERS ADDED AS SHOWN IN DETAIL 4 ON SHEET 12. NO WORK OTHER THAN THAT SHOWN SHALL BE DONE ON THE METAL PLATE EXPANSION JOINTS UNLESS THE ENGINEER CONTACTS THE STRUCTURES DIVISION.
5. THE FINAL LIFT OF PAVEMENT SHALL BE 1/4 INCH HIGHER THAN THE TOP OF THE CONCRETE SHOULDERS. CARE SHALL BE USED DURING PAVING OPERATIONS TO MAKE SURE NO BITUMINOUS MATERIAL BECOMES LODGED IN THE EXPANSION JOINTS NOR ENTERS THE DRAIN TROUGHS.
6. THIS BRIDGE DECK IS TO BE PAVED CURB TO CURB WITH 2 INCHES +/- OF BITUMINOUS CONCRETE PAVEMENT IN TWO COURSES. THE FIRST COURSE SHALL BE 1 INCH +/- OF TYPE IV MIX AND THE TOP COURSE SHALL BE 1 INCH +/- OF TYPE IV MIX. THE TOTAL THICKNESS AND THE THICKNESS OF EACH COURSE SHALL BE DETERMINED BY THE ENGINEER.
7. DETAIL 2 SHEET 11 DOES NOT APPLY TO THIS STRUCTURE.
8. THE FOLLOWING GENERAL NOTES DO NOT APPLY TO THIS STRUCTURE: NO. 28, 29 AND 30.



FINGER PLATE JOINT DETAILS AT ABUTMENTS

NTS

(5)



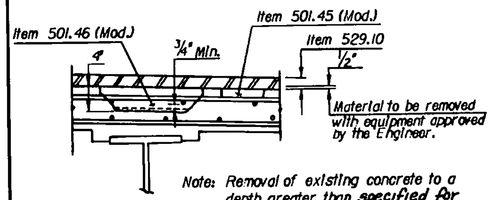
METAL PLATE JOINT DETAILS AT PIERS

NTS

(4)

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

NTS

(6)

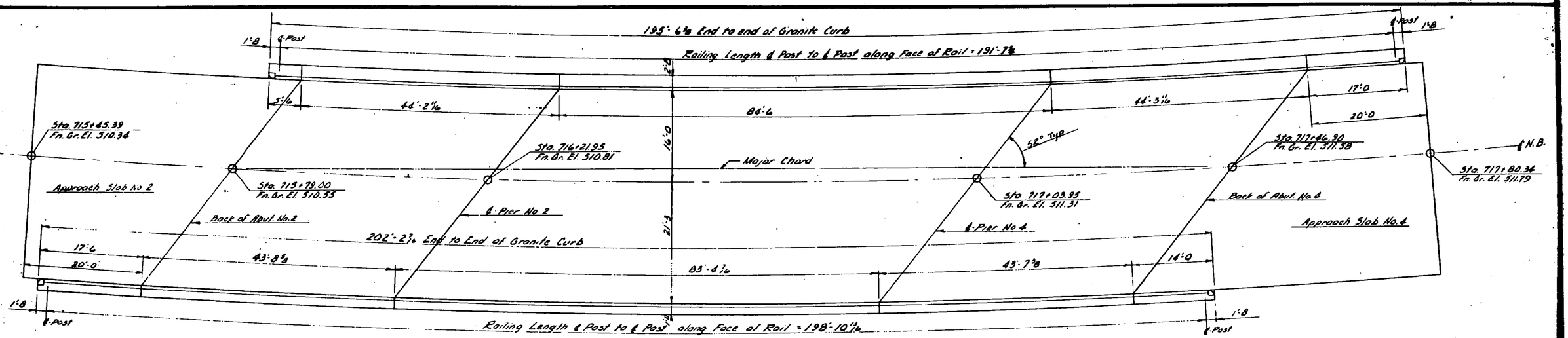
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town of HARTLAND, HARTFORD, SHARON	Bridge No. ——
Highway No.	Log Sta. —— Surv. Sta. ——
TYPICAL DETAILS AND SPECIFIC NOTES	
Designed By C.S. ROGERS	Drawn By D.W. NEWTON
Checked By C.S. ROGERS Date 7/86	Bridge Design Supervisor F.W. Balkum Date 8/86
PROJECT HARTLAND HARTFORD, SHARON	PROJECT NO. IR-DECK(15)
L&C. Info.	OSA#30,321SCUPREHAB.DGN
Bridge Sheet No.	Sheet 12 of 39

BR-6

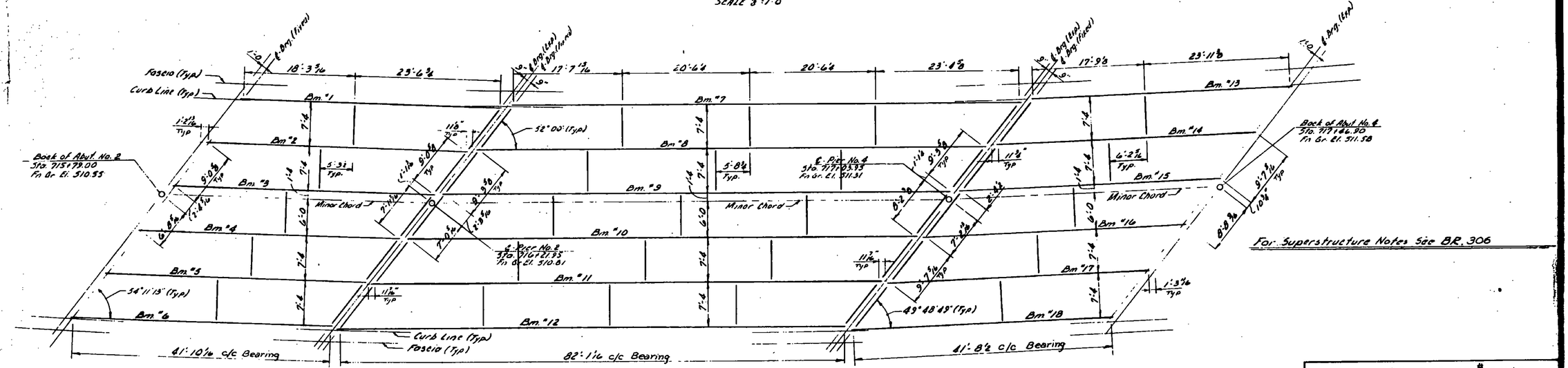
12

* STAGE 2 ITEMS
Approx. Underground Utility Delc. by NET & T
barn
1½ S. W.F. ho.
ALUMINUM COATED STEEL CHAIN LINK FENCE, ITEM 588-I
SB 703+00 Lt. - Ramp 'A' 11+50 Rt.
Ramp 'A' 11+50 - Ramp 'A' 10+00 Rt.
Ramp 'B' 12+08 rt. - 15+52 rt.
Vt 132 12+05 Lt. - Ramp 'D' 5+50 Rt.
ST. GRDBEAM G.R. - ITEM
SB 716+91 Rt. - NB 715+60 Lt.
SB 718+10 Rt. - NB 718+60 Lt.
NB 703+80 Rt. - SB 703+00 Lt.
New 30"x ACCGMP w/ 8' Vertical Riser & grate C
SB 705+00 Lt. - 22'26" Ramp 'A'
New 12"x Pipe CAAC @ all joints
SB 705+00 Lt. - Ramp 'A' 18+38 Rt.
Construct Berm Ditch Item 106
1½ S. W.F. ho.
garage
B.M. 143 U.S. Elev. 496.55
Ramp 'A' P.T. 23+31.81
End 250 Taper
POST. 705+30.30
POST. 711+38.33
P.I. 705+74.57
P.I. 708+71.78
wood shed
saw dust bin
storage shed
saw mill w/ platform
CONSTRUCT BRIDGE Rte. 132 12+30 Lt.
D 9° 30
R 603.11
T 252.29
L 477.89
E 50.64
B.M. 143 U.S. Elev. 483.89
VT. #132 POST. 7+41.96
Ramp C POST. 12+00.00
VT. #132 POST. 7+71.96
4+31.77 Long Chord
Ramp 'A' 10+00.00
Rev. P.T. 8+
Surv. P.O.T. Eq.
Ramp 'D' P.I. 4+56.55
Ramp 'D' Rt. 5+30 Rt. Construct Spec. Ditch Item 103
Approx. Aerial Utility Dela. by CVPSC
B.M. 143-J El. 500.27
Orig. Surv. POST. 706+67.33
POST. 706+64.32
Ramp 'D' P.I.
Vt. 132 P.I. 12+21.96
VT. 132 POST. 11+23.96
Ramp 'B' POST. 10+00.00
Ramp 'D' POST. 0+00.00
barn
house
1½ S. W.F. ho.
approx. loc. of T.V. cable
* THREE CABLE GUARD RAIL LIGHT STEEL POSTS, ITEM 598
NB 705+55 - 713+32 Rt.
N.B. 718+46 - 719+00 Rt.
S.B. 703+00 Lt. - Rte. 132 6+54 Rt.
S.B. 708+95 - 715+44 Lt.
710+45
Ramp B 6+52 - 715+00 Rt.
DEMOLITION & DISPOSAL OF BUILDINGS, ITEM 586
710+20 Lt.
711+10 Lt.
13+75 Ramp A NB Rt.
14+50 Ramp A NB Rt.
714+00 B
15+00 Rt. B
720+00 Lt.
720+60 SB Lt.
* BRIDGE RAILING (For Bridge Approaches) Item 572
SB 715+ - 716+ Lt.
SB 714+ - 716+ Rt.
NB 713+ - 715+85 Lt.
NB 713+19 - 715+45 Rt.
SB 718+81 - 719+00 Lt.
SB 718+49 - 719+00 Rt.
NB 717+78 - 718+ Lt.
NB 717+48 - 718+67 Rt.
Ramp 'B' 7+25 Rt. - Ramp A 19+50 Rt.
New 24"x ACCGMP 129 Mod. w/ 32' Vertical Riser @ 707+60
Ramp 'D' 9+00 Rt. - Ramp A 19+00 Rt.
New 30"x 420' ACCGMP 10 Gage
10" diam. conc. pipe w/ ½ lead
Water Pipe & Sleeve, ROW Bid Item
POST 710+85 63+30 Show Rt. See Details for Gage
See Sheet 63-69 or 300
NB 711+
New 18" Vertical Riser
CHAIN LINK FENCE W/ POSTS, ITEM 583
VERTICAL GRANITE CURB, ITEM 556-B
PRECAST REINF. CEM. CONC. CURB ITEM 556-B TYPE A
STONE FILL FOR SLOPE PROTECTION, ITEM 512
* DENOTES STAGE 2 ITEMS
OFFSET. DESCRIPTION
300' Drilled Well
Drilled Well
860' Drilled Well
Wood Box
Wood Box
Drilled Well
150' Drilled Well
1230' Reinf. Conc. Pipe
1205' Wood Box
1210' Reinf. Conc. Pipe
1220' Wood Box
500' Drilled Well
Ramp "A"
Ramp "B"
N/L
Rte. 132
Δ 23° 09' 36" Lt.
Δ 22° 21' 06"
D 5° 30'
Vt. Rte. 132 6+88 - 7+
Vt. Rte. 132 10+63 - 10+7
Vt. Rte. 132 11+38 - 11+7



N.B. SUPERSTRUCTURE PLAN

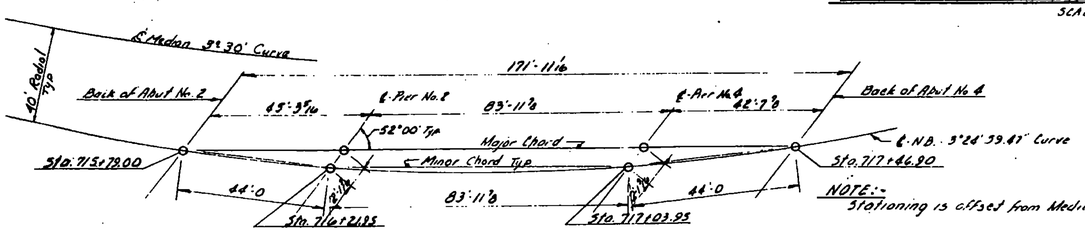
SCALE 3/32"=1'-0



For Superstructure Notes See BR. 306

N.B. FRAMING PLAN

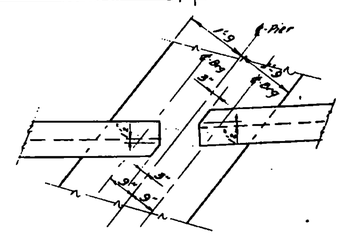
SCALE ⅛"=1'-0



NOTE:- Stationing is offset from Median

N.B. CURVE LAYOUT

Not To Scale



DETAIL OF WF CUTOFFS @ PIERS

SCALE ¾"=1'-0

(Note: Cut top flange only)

CAMBER

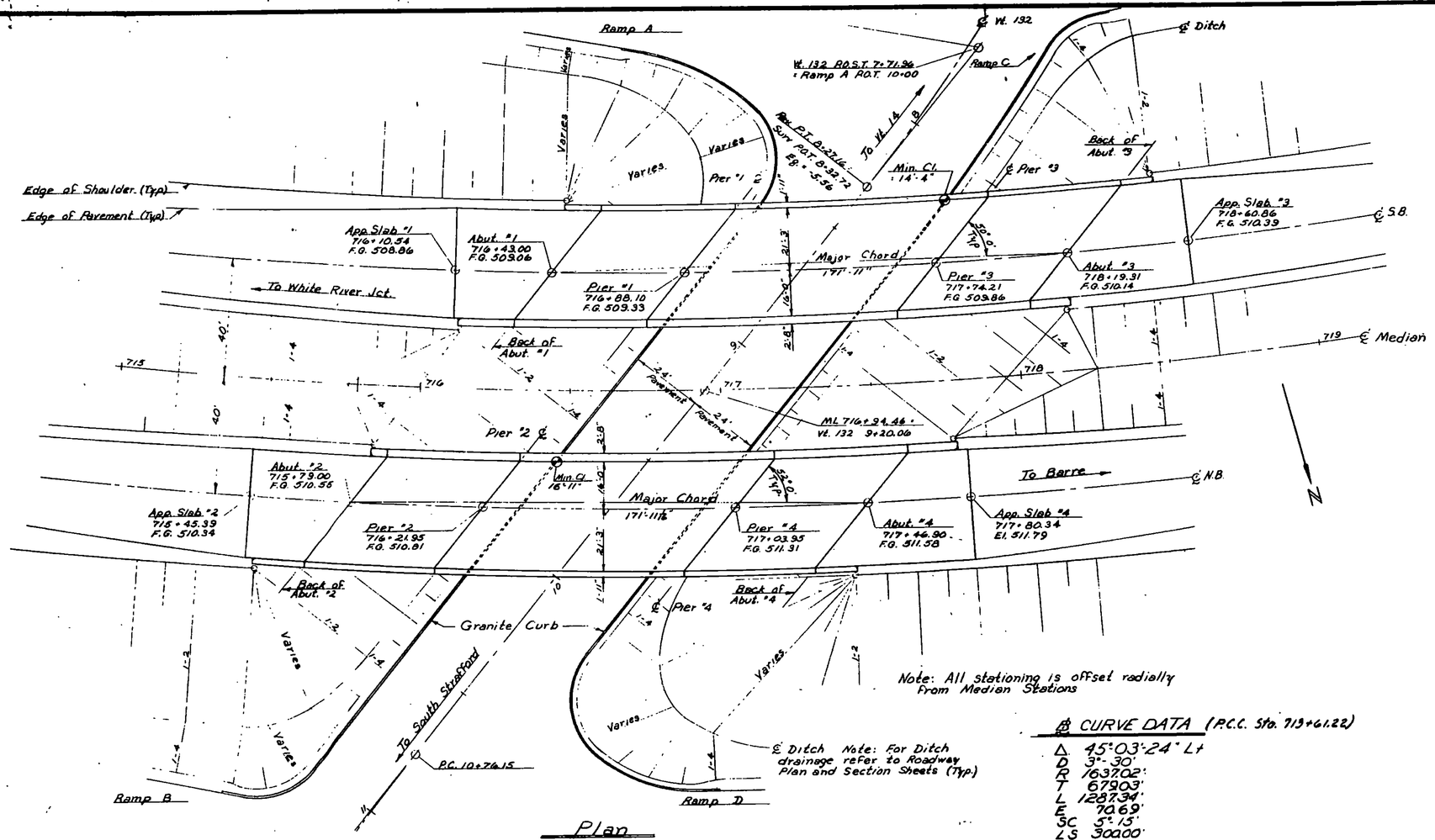
44' Span: 1"
84' Span: 3½"

IR-DECK (15) I-89, BR. #15 N&S
THIS SHEET FOR INFORMATION ONLY

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT HARTFORD-SHARON
TOWN OF SHARON
ROUTE NO. I-89 STA. 717+00
I-89 OVER VT 132
N.B. SUPERSTRUCTURE
SCALE As Shown
IN CHARGE E. Dailey
DRAWN BY E.Dailey CHECKED BY W. Tripp
PROJECT NO. I-89-2
SHEET [redacted]

15



Plan
Scale: 1" = 20'

General Notes

1. Elevation datum is sea level based on nearest U.S. Government Vertical control.
2. For additional General Notes see Standard SCB-D1-65
3. Where Bottom of Footing Elevations are above old ground Fill is to be placed 0.5 feet above Bottom of Footing before Piles are driven. Excavation of this material to Bottom of Footing Elevation after Piles are driven shall be paid for as Structure Excavation, Item 109.
4. Approach Slabs shall be constructed as part of Stage I construction.
5. Shop Drawings for Item 556.C, Granite Bridge Curb, shall be submitted in triplicate to the State of Vermont, Department of Highways, for approval before fabrication.

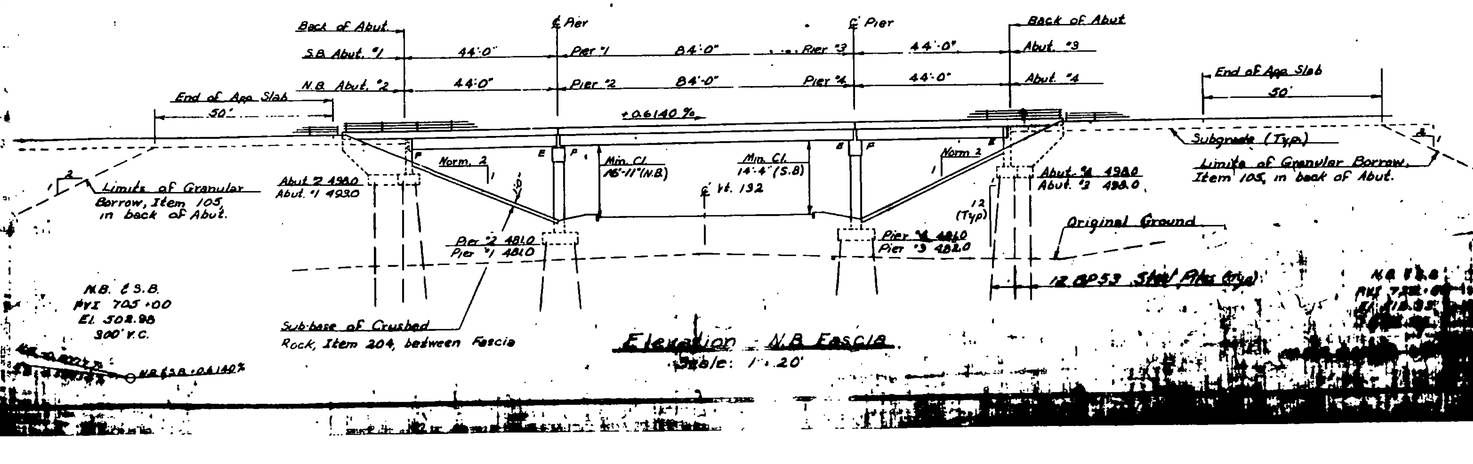
List of Bridge Sheets

℄ CURVE DATA (P.C.C. Sta. 719+61.22)

Δ	45°03'-24" Lt
D	3°-30'
R	1637.02'
T	679.03'
L	1287.34'
E	70.69'
SC	5°.15'
LS	300.00'
P	2.29
X	149.96
Y	299.75
Xc	9.16
LT	200.00
ST	100.08

STANDARD SHEETS

SCB-37.25-65
SCB-01-65
SCB-02-65 (All details)
SCB-03-65 (All details)
SCB-04-65
SCB-05-65
SCB-06-63 (Details A, B, D, & F)
SCB-07-65 (All details)
SCB-08-65 (All details)
SCB-09-65 (Detail A)
SB-R1-64, Sh 1&2 of 2
SB-R2-65



Elevation - N.B. Fascia
Scale: 1" = 20'

IR-DECK (15) I-89, BR. #15 N & S
THIS SHEET FOR INFORMATION ONLY

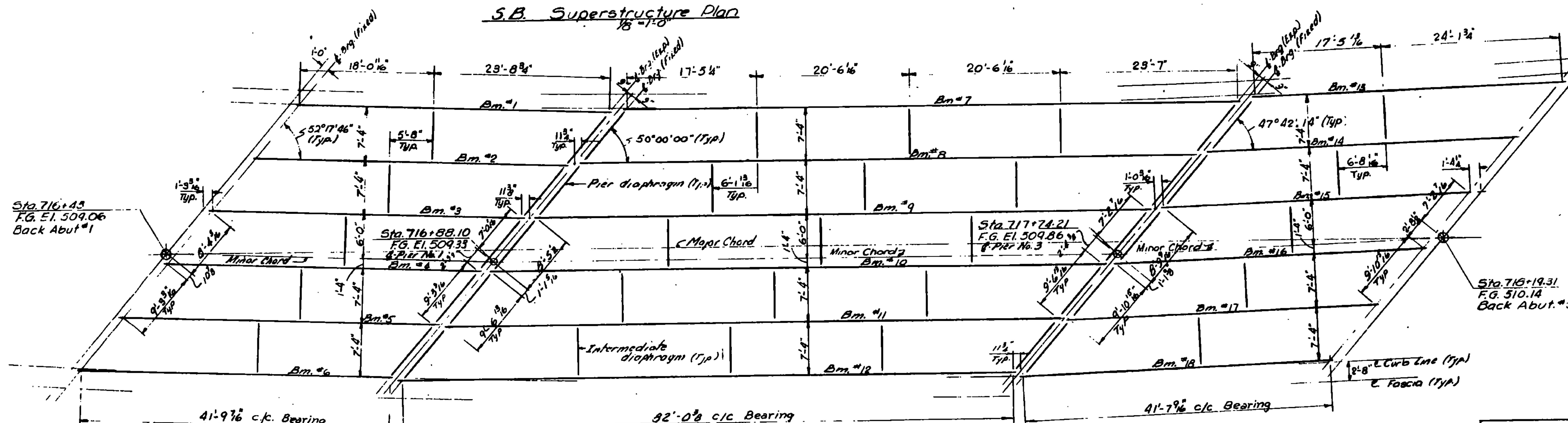
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

PROJECT HARTFORD-SHAROK
TOWN OF SHAROK
ROUTE NO. I 89 STA. 71[illegible]
I 89 over Wt. 132
PLAN & ELEVATION GENERAL
SCALE As Noted
Date

16

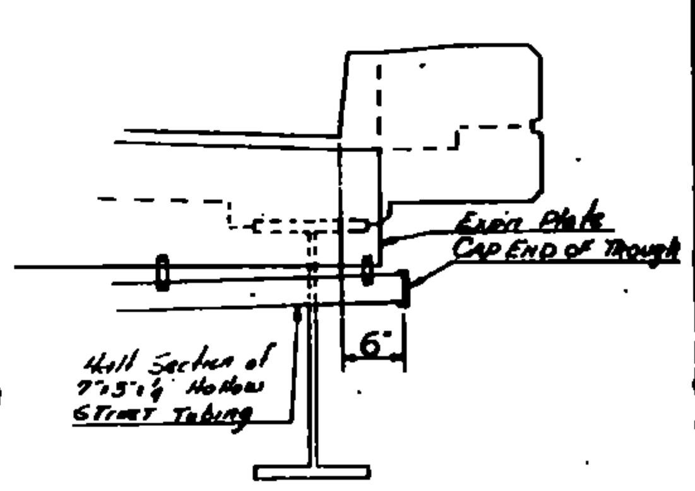
S.B. Superstructure Plan

1/8" = 1'-0"



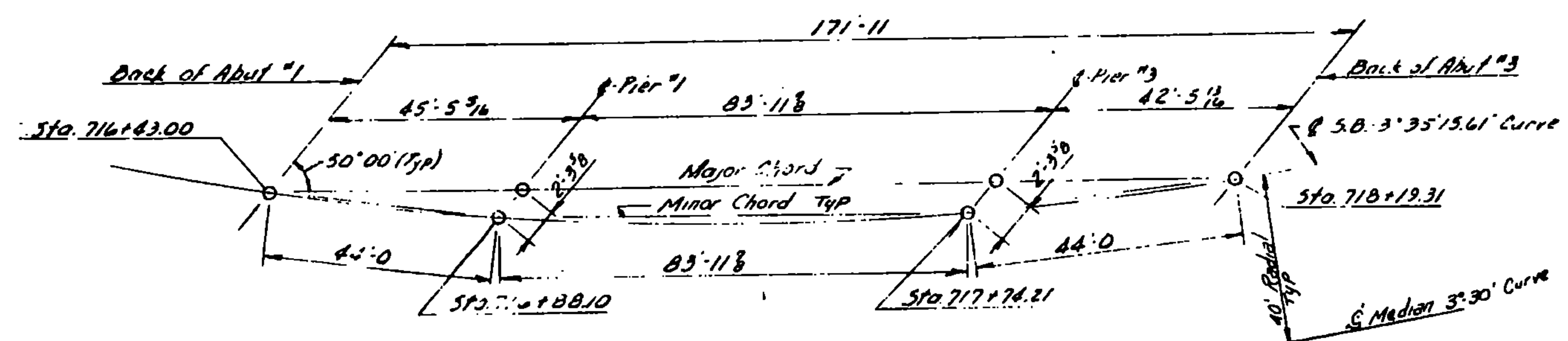
S.B. FRAMING PLAN

SCALE 1/8" : 1'-0



SECTION AA

Typical both ends of all Piers



S.B. CURVE LAYOUT

Not To Scale

(Note:- Stationing is offset from Median)

CAMBER

44' Span : 1"

84' Span : 3 1/2"

NOTES:-

1- For General Notes see BR. 300
2- For Beam sizes and Cover Plate sizes and lengths see Standard Sheets SCB-3725-65 and SCB-D7-65, Detail "C."
3- For additional details of diaphragms see Standard Sheet SCB-D7-65, Details A, D & E.
4- Typical Sections of Superstructure as per Standard Sheet SCB-3725-65 except modified as necessary for bank of 15/16"/ft left.
5- No Scuppers are to be used on this bridge
6- For details of cutoffs at the Piers see BR. 307
7- For Additional Superstructure Details See Standard Sheets SCB-D1-65 Thru SCB-D9-65.
8- For Details of Shear Connectors on 84 foot Span See Standard Sheets SCB 3725-65 and SCB D2-65 Detail B
9- For Details of Bridge Railing see Standard SB R1-65 Sh. 1 & 2 and SB R2-65. Post spacing not to exceed maximum shown on [illegible] with ℄ [illegible] [illegible] from curb [illegible]

IR-DECK (15) I-89, BR. #15 N & S

THIS SHEET FOR INFORMATION ONLY

STATE OF VERMONT

DEPARTMENT OF HIGHWAYS

PROJECT HARTFORD-SHARON

TOWN OF SHARON

ROUTE NO. I-89 STA. 717+0

I-89 OVER VT. 132

S.B. SUPERSTRUCTURE

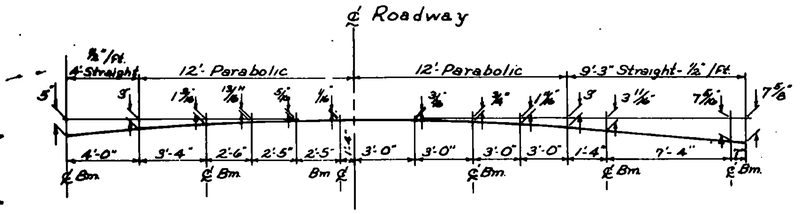
SCALE As Shown

In Charge E. Oalley

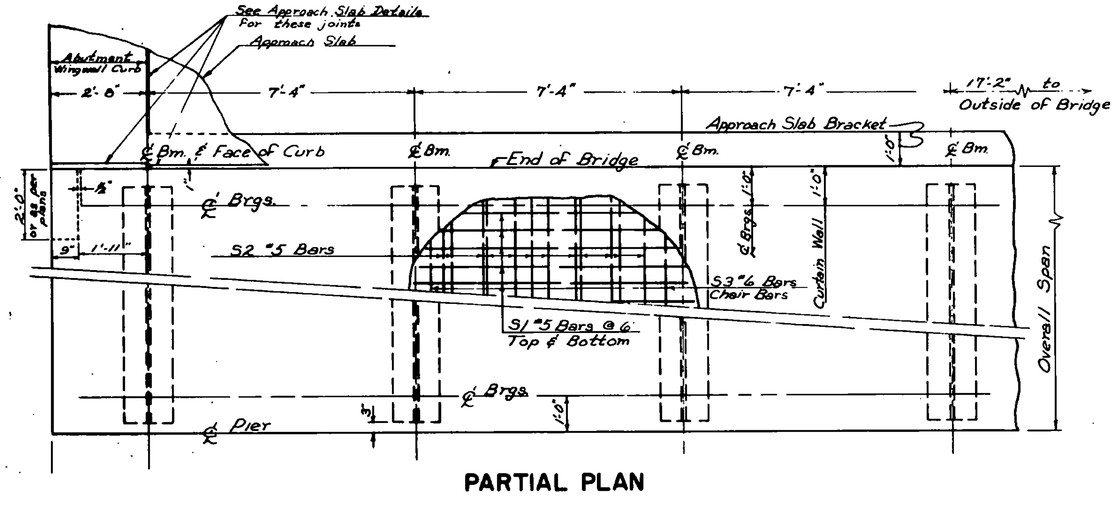
DRAWN BY [illegible] CHECKED BY [illegible]

PROJECT NO. [illegible]

SHEET [illegible]



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB

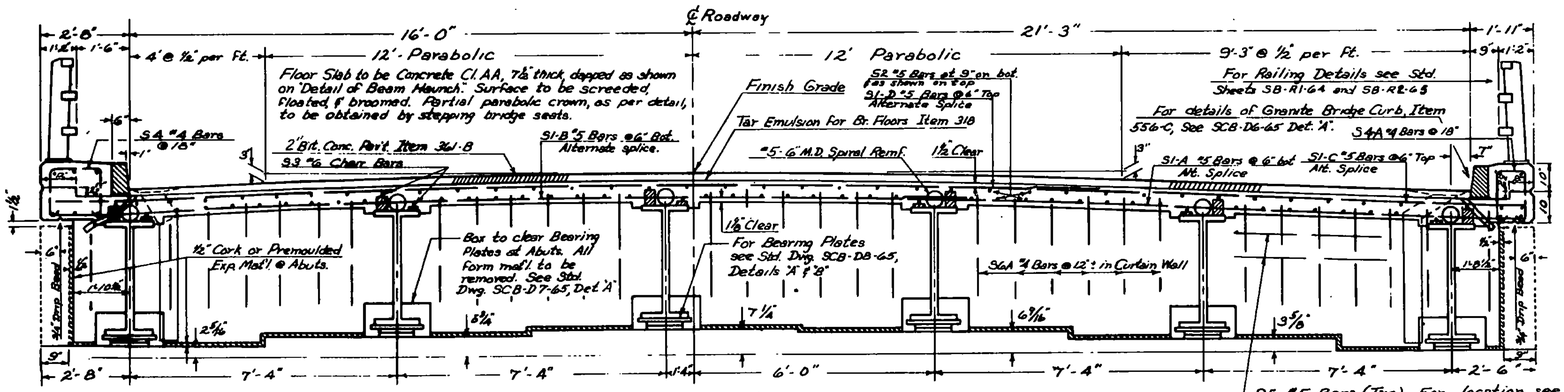


PARTIAL PLAN

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN (INCLUDES TWO CURTAIN WALLS)

Span- Out to Out	99'-0"	94'-0"	89'-0"	84'-0"	79'-0"	74'-0"	69'-0"	64'-0"	59'-0"	54'-0"	49'-0"	44'-0"	39'-0"	34'-0"
Span- ℄ to ℄ Bearings	97'-0"	92'-0"	87'-0"	82'-0"	77'-0"	72'-0"	67'-0"	62'-0"	57'-0"	52'-0"	47'-0"	42'-0"	37'-0"	32'-0"
Length of Beams	98'-0"	93'-0"	88'-0"	83'-0"	78'-0"	73'-0"	68'-0"	63'-0"	58'-0"	53'-0"	48'-0"	43'-0"	38'-0"	33'-0"
Size WF Beams	36WF280	36WF245	36WF230	36WF230	36WF194	36WF170	36WF150	36WF135	36WF135	36WF135	36WF135	36WF135	33WF118	30WF108
Lgth. & Size Cover ℙ (Bot. only)	66'-1" lg. 14" × 1½"	65'-7" lg. 14" × 1½"	59'-5" lg. 14" × 1¼"	49'-5" lg. 14" × ⅞"	49'-10" lg. 10" × 1¼"	47'-1" lg. 10" × 1⅛"	45'-9" lg. 10" × 1"	42'-5" lg. 10" × ⅞"	31'-11" lg. 10" × ½"	27'-1" lg. 8" × ½"	———	———	———	———
Dead Load Deflection	3½"	3⅛"	2⅞"	2¼"	1⅞"	1⅝"	1⅜"	1⅛"	⅞"	⅝"	½"	⅜"	¼"	¼"
Diameter of Spiral Bars	———	———	———	———	———	———	⅝"	———	———	———	———	Non Composite		
Mean Diameter of Spiral	———	———	———	———	———	———	6"	———	———	———	———	"	"	"
Spiral Pitch 0'-10' From Brng	Double @ 5½	Double @ 5½	Double @ 5½	Double @ 5½	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5½	Double @ 5½	Non Composite		
" " 10'-20' or ℄ Span	Double @ 6½	Double @ 6"	Double @ 6½	Double @ 7"	Double @ 7"	Double @ 7½	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7½	"	"	"
" " 20'-30' " " "	4"	4"	4½"	4½"	4½"	4½"	4½"	5"	5½"	6"	6"	"	"	"
" " 30'-40' " " "	5"	5"	5"	6"	6"	6"	6"	6"	———	———	———	"	"	"
" " 40'-℄ Span	6½"	6½"	6"	6"	———	———	———	———	———	———	———	"	"	"
*Total Struct. Steel (1 Span) (lbs.)	203,790	175,080	152,480	134,670	110,790	92,210	75,430	63,270	54,730	49,520	43,140	39,010	29,160	23,200
Reinforcing Bars S1-A	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-B	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-C	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S1-D	198	188	178	168	158	148	138	128	118	108	98	88	78	68
" " S2	261	261	261	261	261	261	261	174	174	174	174	174	174	87
" " S3	36	36	36	36	36	36	36	24	24	24	24	24	24	12
" " S4	67	64	60	57	54	50	47	44	40	37	34	30	27	24
" " S4-A	67	64	60	57	54	50	47	44	40	37	34	30	27	24
" " S5	32	32	32	32	32	32	32	32	32	32	32	32	32	32
" " S6-A	64	64	64	64	64	64	64	64	64	64	64	64	64	64
" " S7	54	54	54	54	54	54	54	54	54	54	54	54	54	54
Total Weight Reinf. Bars (lbs.)	30,900	29,410	27,970	26,470	24,990	23,540	22,040	20,310	18,830	17,360	15,890	14,410	12,920	11,200
Approx. Weight Spiral Reinf. (lbs.)	3,150	3,050	2,950	2620	2590	2,450	2,390	2,230	2,040	1,860	1,730	Non Composite		
Total Concrete Class 'AA' (Cu.yds.)	130	124	118	112	106	100	94	88	82	76	70	64	58	51
Total Weight Bit. Conc. Pav't. (Tons)	51	48	45	43	40	37	36	33	31	28	25	23	20	17
Tar Emulsion For Bridge Floors (Gals.)	164	156	148	139	131	123	114	106	98	90	81	73	65	57
Approx. Quantity ¾" × 7" Studs	3820	3740	3,530	3,220	3,170	3,000	2,930	2,740	2,540	2,280	2,110	Non Composite		
Approx. Quantity ⅞" × 7" Studs	2,540	2,500	2,350	2,140	2,110	2,000	1,950	1,820	1,700	1,520	1,410	Non Composite		
Item 440-Water Repellent (Gals.)	2½	2½	2¼	2¼	2	2	1¾	1¾	1½	1½	1¼	1¼	1	1
Camber	4⅝"	4½"	3⅞"	3½"	3⅛"	2¾"	2⅜"	2"	1⅝"	1⅜"	1⅛"	1"	1"	¾"

* Excluding Scuppers and Bearing Devices.



TYPICAL SECTION

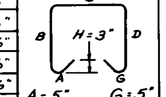
REINFORCING STEEL SCHEDULE

S1-A #5	17'-6"	Straight	S1-B #5 26'-0" Straight
S1-C #5	13'-10"	Straight	S1-D #5 29'-8" Straight
S5 #5	21'-0"	Straight	

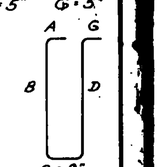
Span	S2 - #5 Str. Length	S3 - #6 Str. Length	S6A - #4 B & D	S6A - #4 Total Length
34	33'-6"	33'-6"	2'-6"	6'-6"
39	20'-3	20'-6"	2'-9"	7'-0"
44	22'-9"	23'-0"	3'-0"	7'-6"
49	25'-3"	25'-6"	3'-0"	7'-6"
54	27'-9"	28'-0"	3'-0"	7'-6"
59	30'-3"	30'-6"	3'-0"	7'-6"
64	32'-9"	33'-0"	3'-0"	7'-6"
69	24'-3"	24'-6"	3'-2"	7'-10"
74	26'-0"	26'-3"	3'-2"	7'-10"
79	27'-6"	28'-0"	3'-3"	8'-0"
84	29'-3"	29'-6"	3'-3"	8'-0"
89	31'-0"	31'-3"	3'-3"	8'-0"
94	32'-6"	33'-0"	3'-4"	8'-2"
99	34'-3"	34'-6"	3'-4"	8'-2"

S4-#4: T.L. 5'-5", B. 1'-5", D. 1'-5", C. 1'-9"

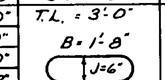
S4A-#4: T.L. 4'-8", B. 1'-5", D. 1'-5", C. 1'-0"



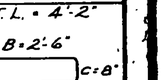
S6A #4: T.L. Varies, A=5" G=5"



S7 - #6: T.L. = 3'-0", B = 1'-8", A=8" G=8"



S6P - #5: T.L. = 4'-2", B=2'-6", C=8", D=1'-0"



Revisions & Corrections

1. Changed Bit. Conc. thickness from 1½" to 2" & revised Tot. Wt. of Bit. Conc. Pav't. — K 1-21-66
2. Changed SB-R3-64 to SB-R2-65 — K 1-21-66
3. Revised Item 440 — K 2-24-66

Drawn By: W.B.T. Aug. 1964. Revised Jan. '65
Traced By: W.B.T. Aug. 1964. Revised Jan. '65
Checked By: T.K.-W.M.S. Oct. 1964. Rev. Jan. '65

Recommended For Approval: Bridge Engineer — Date 2/4/65
Recommended For Approval: Asst. Chief Engineer — Date 2/4/65
Approved By: Chief Engineer — Date 2/4/65

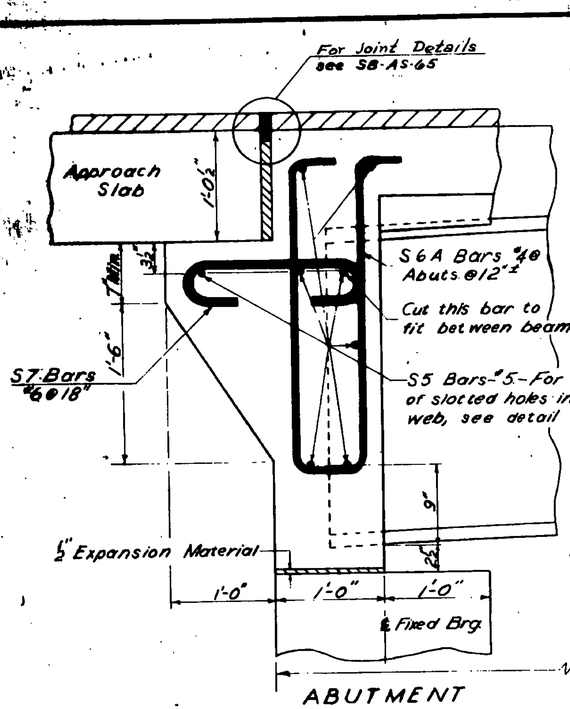
TYPICAL SECTION, PLAN VIEW, & QUANTITIES
37.25 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - HS 20-44 - (A.S.T.M.-A36-62T STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARDS SCB-D1 THRU D9-65

IR-DECK (15) I-89, BR # 15 N&S
THIS SHEET FOR INFORMATION ONLY

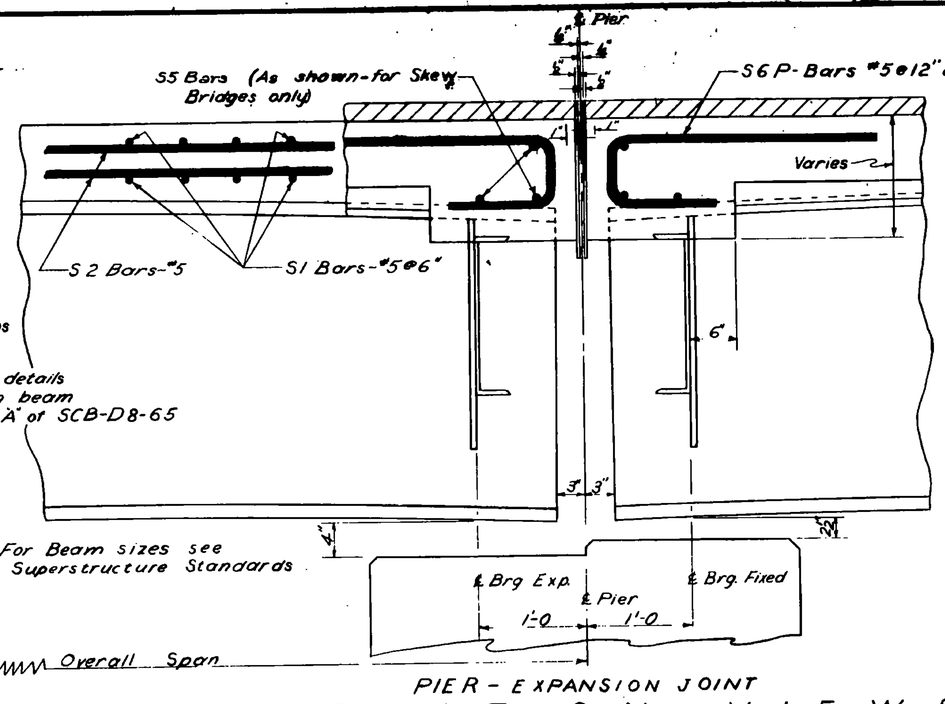
STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-37.25-65

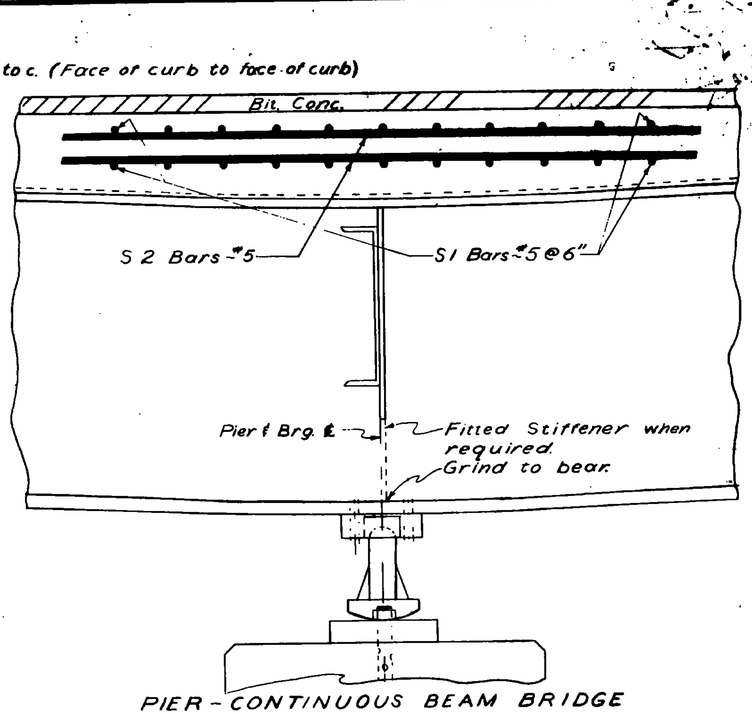
18



ABUTMENT

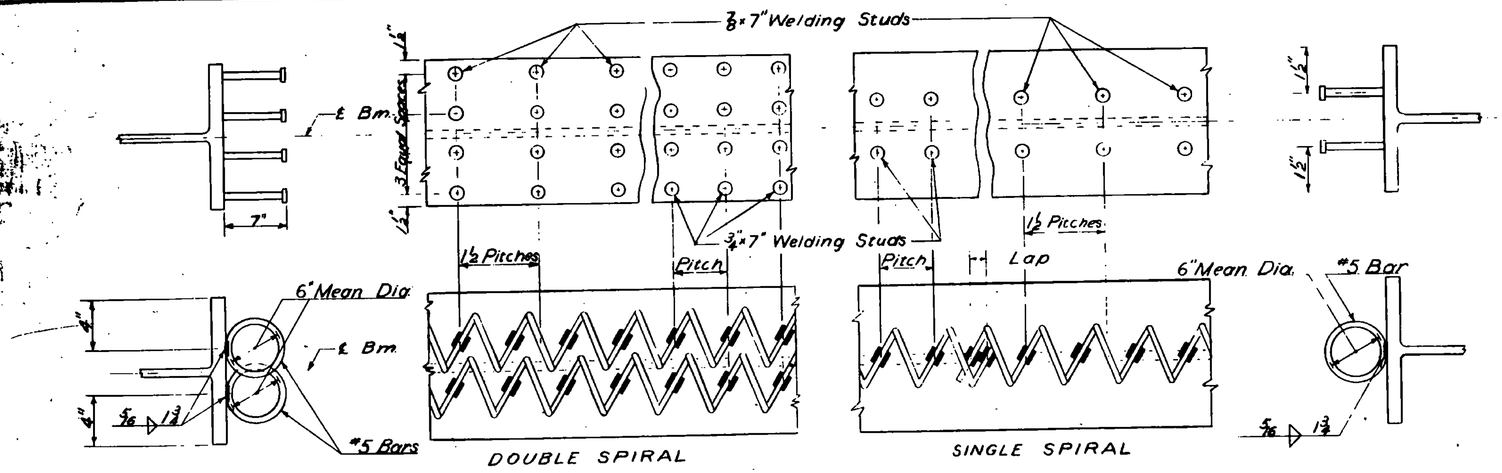


PIER - EXPANSION JOINT



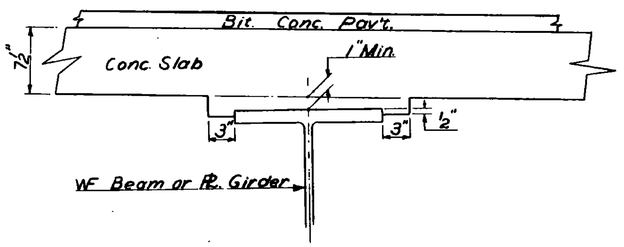
PIER - CONTINUOUS BEAM BRIDGE

E L E V A T I O N V I E W S



SHEAR CONNECTOR DETAILS

Ⓑ



BEAM HAUNCH

IR-DECK (15) I-89, BR #15, N&S
THIS SHEET FOR INFORMATION ONLY

REVISIONS & CORRECTIONS

1

Drawn By: [illegible] 12/1/62 Revised WBT 1/25/65
Traced By: [illegible] 12/1/62 Revised WBT 1/25/65
Checked By: CEP WMS RSH 12/7/62 Rev. WMS 1/24/65
Recommended For Approval: Bridge Engineer — Date 2/4/65
Recommended For Approval: Assist. Chief Engineer — Date
Approved By: Chief Engineer — Date 2/4/65

DETAILS OF WF BEAM BRIDGES

Ⓐ ELEVATION VIEWS
Ⓑ SHEAR CONNECTOR DETAILS
Ⓒ BEAM HAUNCH DETAIL

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCD

The top of the Expansion Plates shall be flush with the finished roadway surface.

Steel for Expansion Plate shall conform to A.S.T.M. Desig A-242

Item 372-C

Precaution shall be taken to insure that the plastic tubes do not get clogged during construction.

¾" or ⅞"x7" Welding Studs

2" c. to c. Staggered

1"dia. plastic tube placed @ 2'± interval for drainage between bit. pavement & conc. slab

4-1"ø Rods (Typ.) 4'-0 Long. Coat one end with suitable lubricant to prevent bond

For hanger detail see detail B

Half-section of 7"x 5"x½" thick Hollow Structural Tubing for trough. Min. slope ¼" per ft.

4'± Typ.

Pier Cap

Column

Type "A" (over the end of the pier cap.) To be used primarily over stream crossings. Typical for each end of pier.

5"x3"x¼" thick Hollow Structural Tubing.

Payment for Splash Pad to be at the unit price bid for Conc. Class B Item #401-B.

Column

Typ. 6"±

Type "B" (over the side of the pier cap.) To be used primarily over dry crossings. Typical for each end of pier.

For clamps see detail E

45° Elbow to be 2" above 4'x4'x4" thick conc. splash pad

#9 Wire mesh @ 6" c. to c. to be included in the unit cost of conc.

4'

2" Min.

ELEVATION VIEW OF EXPANSION PLATE & DRAIN TROUGH

END VIEW

A

¾"x1"lg. Welding Studs plated to A.S.T.M. specification A-165 T. Type T.S. - Galvonized nuts & lock-washers.

2" Min.

@ 68°F

5"

2½"

3½"

4"

½ of Plated welding studs or ⅝"x¼" anch. bolts

½" Min

¾"±

¼"

8" Galvanized Strap

HANGER DETAIL

B

¼" Plate - Weld all seams

8"

4"

5"

3"

8"

FRONT ELEVATION

PLAN VIEW

RIGHT ELEVATION

HOPPER DETAIL

C

All joint materials and dimensions are to be as shown in Curb Joint Detail, Sh. SB-AS-65 or as detailed on plans

SECTION A-A

CURB JOINT DETAIL

D

5" Min.

6" Thread

¼" Thick x 2" wide Galvanized

½" Dia. anchor bolts to be either cast in place as shown, or expansion bolts approved by the Engineer.

3"

4"

8"

Anchor bolt nuts & lock washers to be galvanized

CLAMP DETAIL

Clamps are to be spaced not greater than 8'-0" c.c.

E

REVISIONS & CORRECTIONS

Drawn By: XX 12/1/62 Revised: WT 12/5/62

Traced By: XX 12/1/62 Revised: WT 12/5/62

Checked By: E.F.P. WMS. RSH 12/4/62 Rev. WMS 12/6/62

Recommended For Approval — Bridge Engineer — 2/4/65 Date

Recommended For Approval — Assist. Chief Engineer — 2/4/65 Date

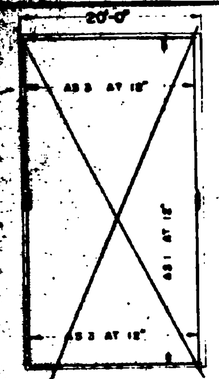
Approved By — Chief Engineer — 2/4/65 Date

DETAIL OF WF BEAM BRIDGES
PIER EXPANSION PLATES & DRAIN TROUGH DETAILS

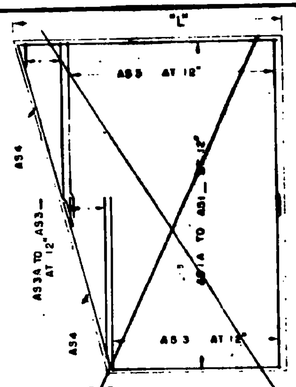
VERMONT DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCP-D2-65

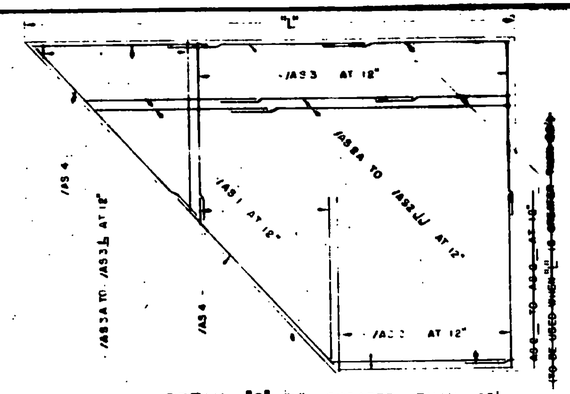
20



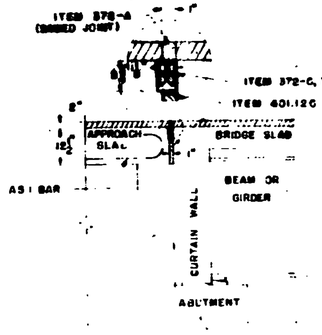
DETAIL "A" - SQUARE



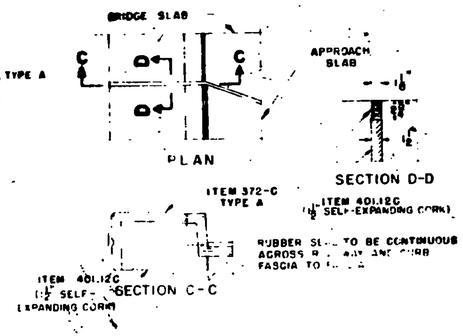
DETAIL "B" - "L" LESS THAN 35'



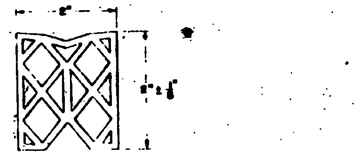
DETAIL "C" - "L" GREATER THAN 35'



SECTION B-B

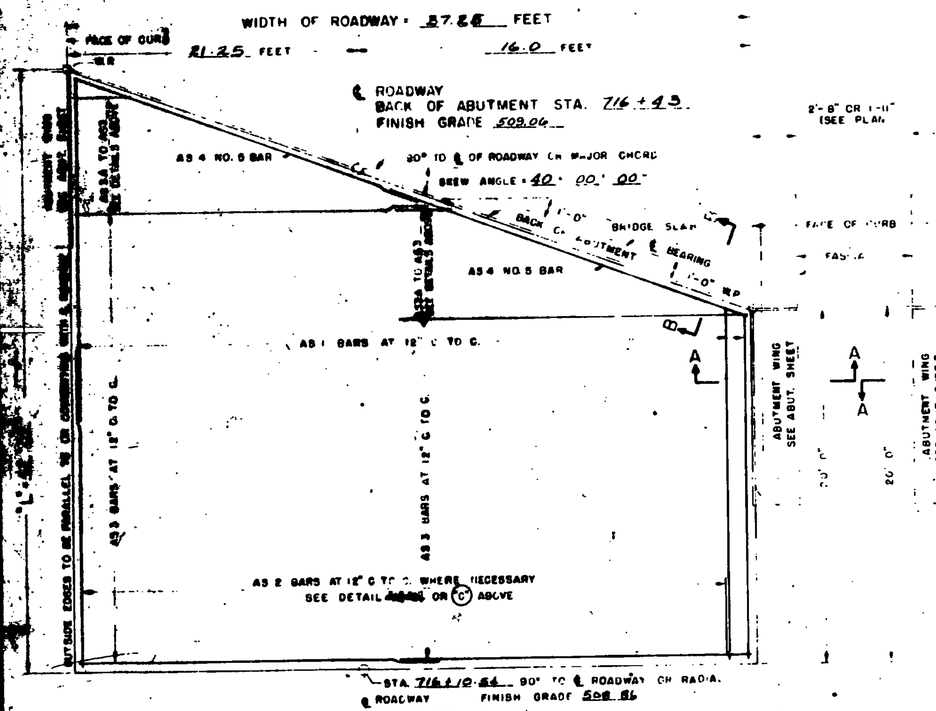


CURB JOINT DETAIL

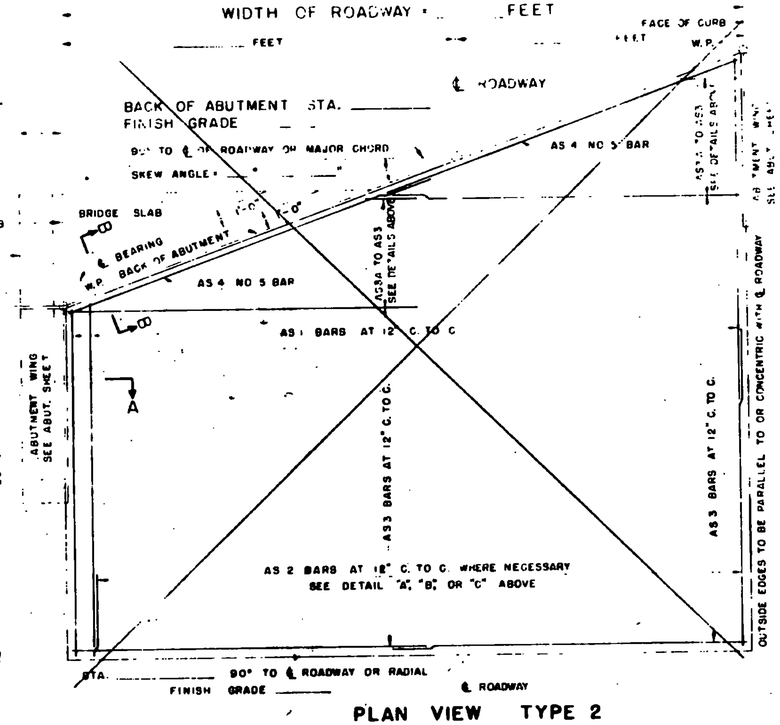


DETAILS - ITEM 372-C JOINT SEALER - PREFORMED

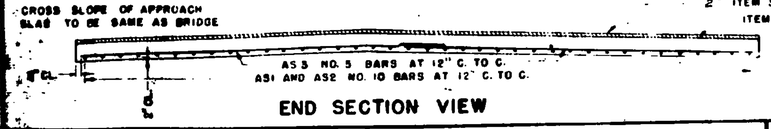
MATERIAL TO BE PREMOLDED NEOPRENE RUBBER (OTHER CONFIGURATIONS THAT SATISFY SPECIFICATIONS MAY BE USED.)



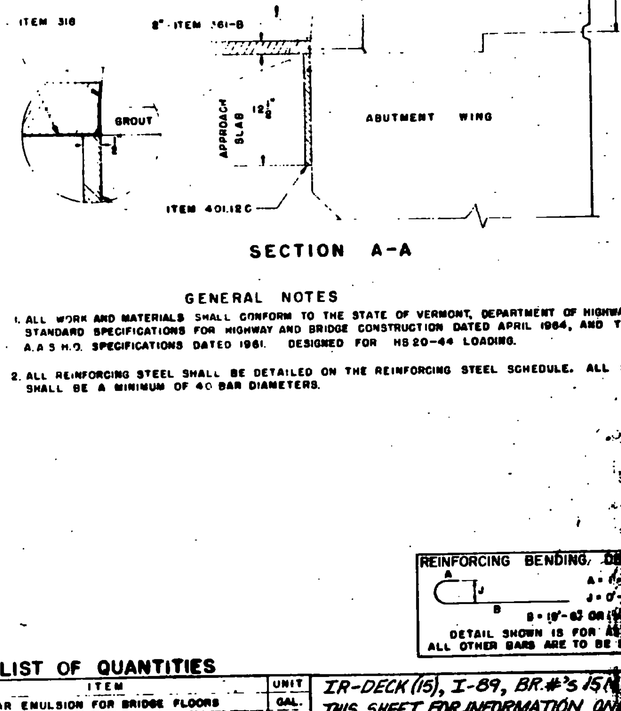
PLAN VIEW TYPE 1



PLAN VIEW TYPE 2



END SECTION VIEW



SECTION A-A

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1964, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR HS 20-44 LOADING.
2. ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. ALL SPLICES SHALL BE A MINIMUM OF 40 BAR DIAMETERS.

REINFORCING BENDING DETAIL

A = 1'-6"
J = 0'-
B = 19'-6" OR (
DETAIL SHOWN IS FOR A
ALL OTHER BARS ARE TO BE ST

LIST OF QUANTITIES

ITEM NO.	ITEM	UNIT
316	TAR EMULSION FOR BRIDGE FLOORS	GAL.
361-B	BITUMINOUS CONCRETE PAVEMENT	TONS
372-A	JOINT SEALER - HOT POURED	L.F.
372-C	JOINT SEALER - PREFORMED, TYPE A	L.F.
401-B	CONCRETE CLASS B	CY.
402	REINFORCING STEEL	LB.

IR-DECK(15), I-89, BR.#'s 15N ...
THIS SHEET FOR INFORMATION ONLY

REVISIONS AND CORRECTIONS

1. DIMENSIONS OF JOINT FOR SEALER TYPE A REVISED. 3/15/65 W.B.T.
2. DIMENSIONS OF JOINT SEALER TYPE B REVISED 6/23/65 W.B.T.
3. JOINT BETWEEN CURB AND SLAB REVISED, BITUMINOUS CONCRETE REVISED TO 2", QUANTITY TOTALS REVISED 12/7/65. W.B.T.

DRAWN BY: W.B.T. and ...
TRACED BY: W.B.T. and ...
CHECKED BY: W.M.S. F...

RECOMMENDED FOR APPROVAL: ... BRIDGE ENGINEER DATE 2/4/65
RECOMMENDED FOR APPROVAL: R.H. Arnold ASSISTANT CHIEF ENGINEER DATE 2/4/65
APPROVED BY: C.O.T. ... CHIEF ... DATE 2/4/65

DETAILS OF APPROACH SLAB FOR 37.25 (WIDTH) FOOT BRIDGE

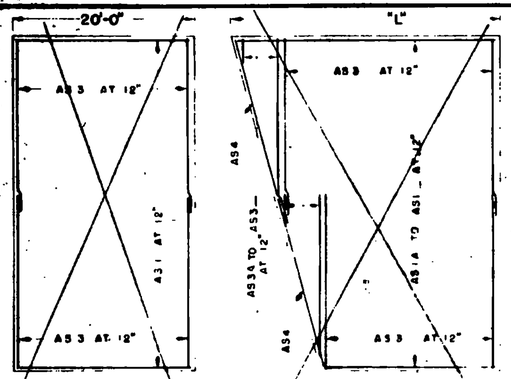
TO BE USED FOR BRIDGE AT STATION 717+0...

LOCATION I 89 OVER VT 132

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE
SB-A8-...

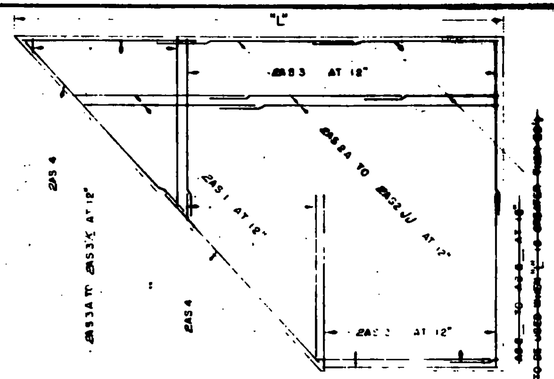
PROJECT HARTFORD - SHARON
TOWN OF SHARON
ROUTE NO. I 89 STA. 717+0...
I 89 OVER VT 132

21

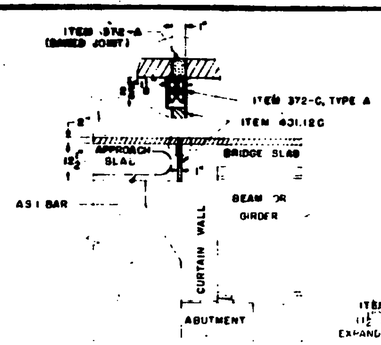


DETAIL "A" - SQUARE

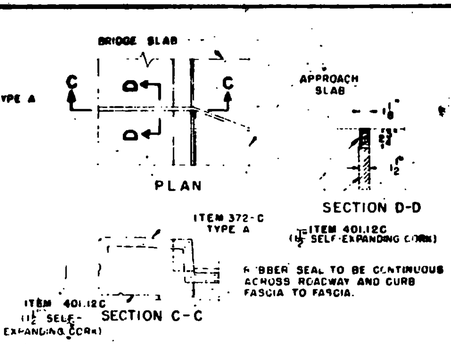
DETAIL "B" - "L" LESS THAN 35'



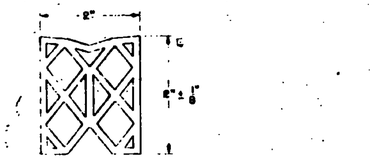
DETAIL "C" - "L" GREATER THAN 35'



SECTION B-B

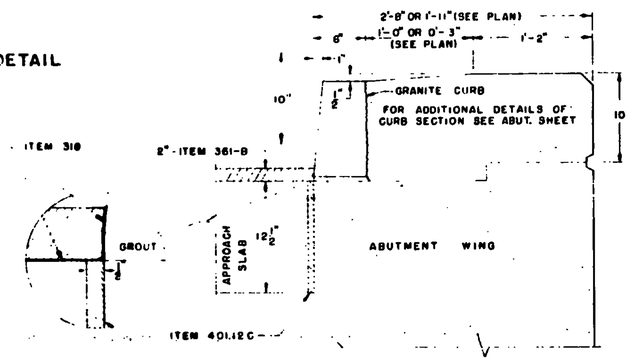


CURB JOINT DETAIL



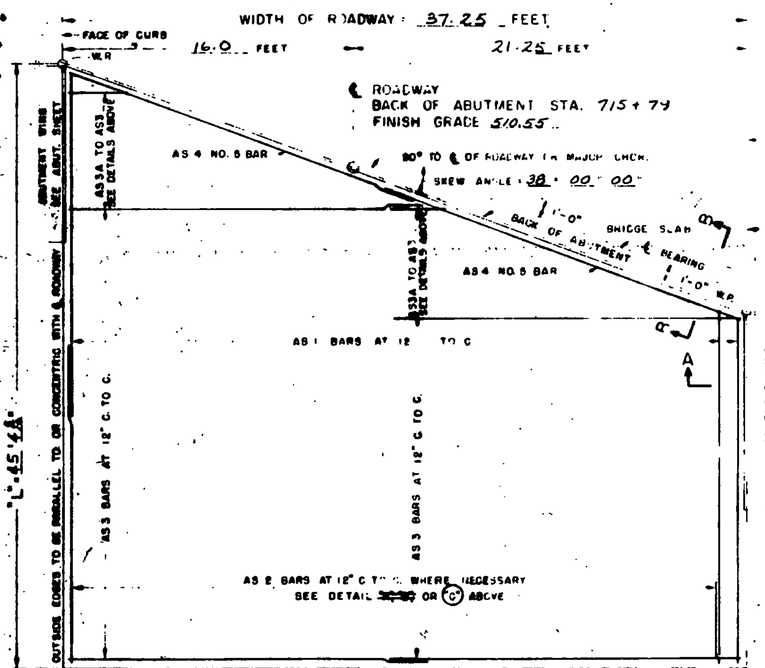
DETAILS - ITEM 372-C JOINT SEALER - PREFORMED

MATERIAL TO BE PREMOLDED NEOPRENE RUBBER
(OTHER CONFIGURATIONS THAT SATISFY SPECIFICATIONS MAY BE USED.)

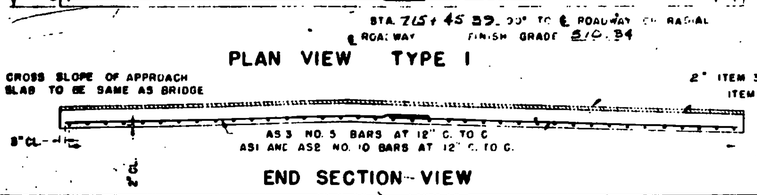


SECTION A-A

WIDTH OF ROADWAY = 37.25 FEET

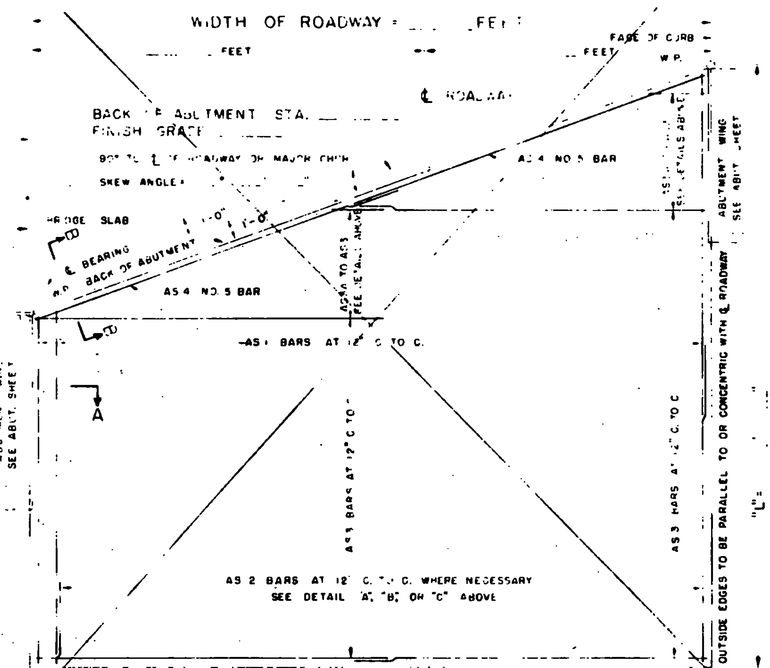


PLAN VIEW TYPE 1



END SECTION VIEW

WIDTH OF ROADWAY = ___ FEET



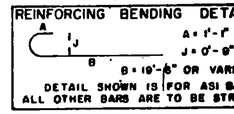
PLAN VIEW --- TYPE 2

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1964, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR H S 20-44 LOADING.

2. ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. ALL SPLICES SHALL BE A MINIMUM OF 40 BAR DIAMETERS.

REINFORCING BENDING DETAIL



DETAIL SHOWN IS FOR AS1 BAR
ALL OTHER BARS ARE TO BE STRAIGHT

LIST OF QUANTITIES

ITEM NO.	ITEM	UNIT
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.
361-B	BITUMINOUS CONCRETE PAVEMENT	TONS
372-A	JOINT SEALER - HOT POURED	L.F.
372-C	JOINT SEALER - PREFORMED, TYPE A	L.F.
401-B	CONCRETE CLASS B	CY.
402	REINFORCING STEEL	LB.

IR-DECK(15), I-89, BR. #'s 15 N & S
THIS SHEET FOR INFORMATION ONLY

PROJECT HARTFORD - SHARON
TOWN OF SHARON
ROUTE NO. I 89 STA. 717+0
I 89 OVER VT. #132
APPROACH SLAB #2 (N.B.)
NOT TO SCALE
IN CHARGE R. Dodge
DESIGNED [illegible] CHECKED BY [illegible]

REVISIONS AND CORRECTIONS

1. DIMENSIONS OF JOINT FOR SEALER TYPE A REVISED. 4/15/66 W.B.T.
2. DIMENSIONS OF JOINT SEALER TYPE B REVISED 6/23/65 W.B.T.
3. JOINT BETWEEN CURB AND SLAB REVISED, BITUMINOUS CONCRETE REVISED TO 2", QUANTITY TOTALS REMOVED. 12/7/65. W.B.T.

DRAWN BY: W.B.T. and [illegible]
TRACED BY: W.B.T. and [illegible]
CHECKED BY: WMS Feb '65

RECOMMENDED FOR APPROVAL: [signature] BRIDGE ENGINEER DATE 2/4/65
RECOMMENDED FOR APPROVAL: [signature] ASSISTANT CHIEF ENGINEER DATE 2/4/65
APPROVED BY: [signature] CHIEF ENGINEER DATE 2/4/65

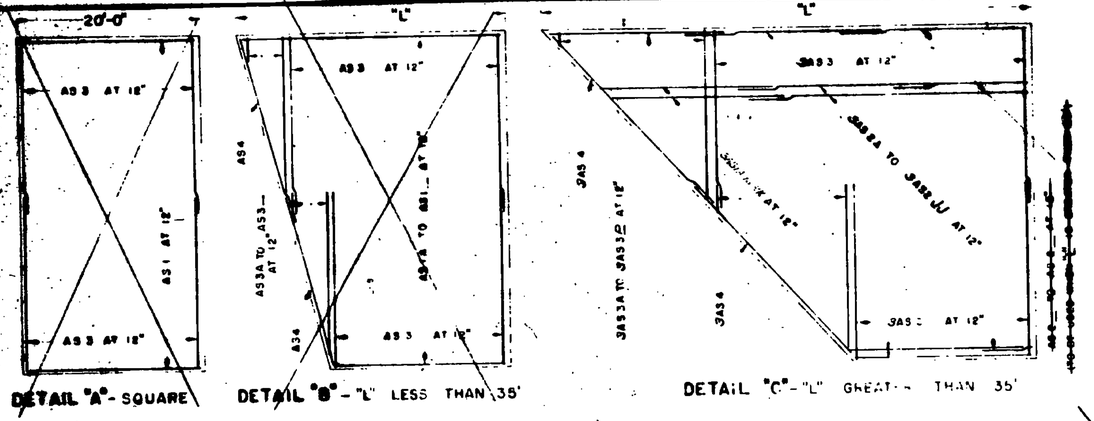
DETAILS OF APPROACH SLAB FOR 37.25 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 717+0

LOCATION I 89 OVER VT. #132

STATE OF VERMONT DEPARTMENT OF HIGHWAYS STANDARD STRUCTURE

SB-AS-65



DETAIL "A"- SQUARE

DETAIL "B" - "L" LESS THAN 35'

DETAIL "C"-"L" GREATER THAN 35'

SECTION B-B

CURB JOINT DETAIL

DETAILS - ITEM 372-C JOINT SEALER - PREFORMED

MATERIAL TO BE PREMOLDED NEOPRENE RUBBER (OTHER CONFIGURATIONS THAT SATISFY SPECIFICATIONS MAY BE USED.)

SECTION A-A

PLAN VIEW TYPE 1

~~PLAN VIEW TYPE 2~~

END SECTION VIEW

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1964, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR HS 20-44 LOADING.

2. ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. ALL SPLIC SHALL BE A MINIMUM OF 40 BAR DIAMETERS.

REINFORCING BENDING DET

DETAIL SHOWN IS FOR AS1 BA
ALL OTHER BARS ARE TO BE STR

LIST OF QUANTITIES

ITEM NO.	ITEM	UNIT
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.
361-B	BITUMINOUS CONCRETE PAVEMENT	TONS
372-A	JOINT SEALER - HOT POURED	L.F.
372-C	JOINT SEALER - PREFORMED, TYPE A	L.F.
401-B	CONCRETE CLASS B	CY.
402	REINFORCING STEEL	LB.

IR-DECK (15), I-89, BR.#'s 15N
THIS SHEET FOR INFORMATION ONL

PROJECT HARTFORD-SHARON
TOWN OF SHARON
ROUTE NO. I 89 STA. 717+0
I 89 OVER VT. #132
APPROACH SLAB #3
NOT TO SCALE
IN CHARGE E. Oakley
DESIGNED [illegible] CHECKED [illegible]
PROJECT NO. [illegible]

REVISIONS. AND CORRECTIONS
1. DIMENSIONS OF JOINT FOR SEALER TYPE A REVISED 4/16/65 W.B.T.
2. DIMENSIONS OF JOINT SEALER TYPE B REVISED 6/23/65 W.B.T.
3. JOINT BETWEEN CURB AND SLAB REVISED, BITUMINOUS CONCRETE REVISED TO 2", QUANTITY TOTALS REMOVED. 12/7/65. W.B.T.

DRAWN BY: W.B.T. Jan 1965
TRACED BY: W.B.T. Jan 1965
CHECKED BY: WMS Feb. 1965

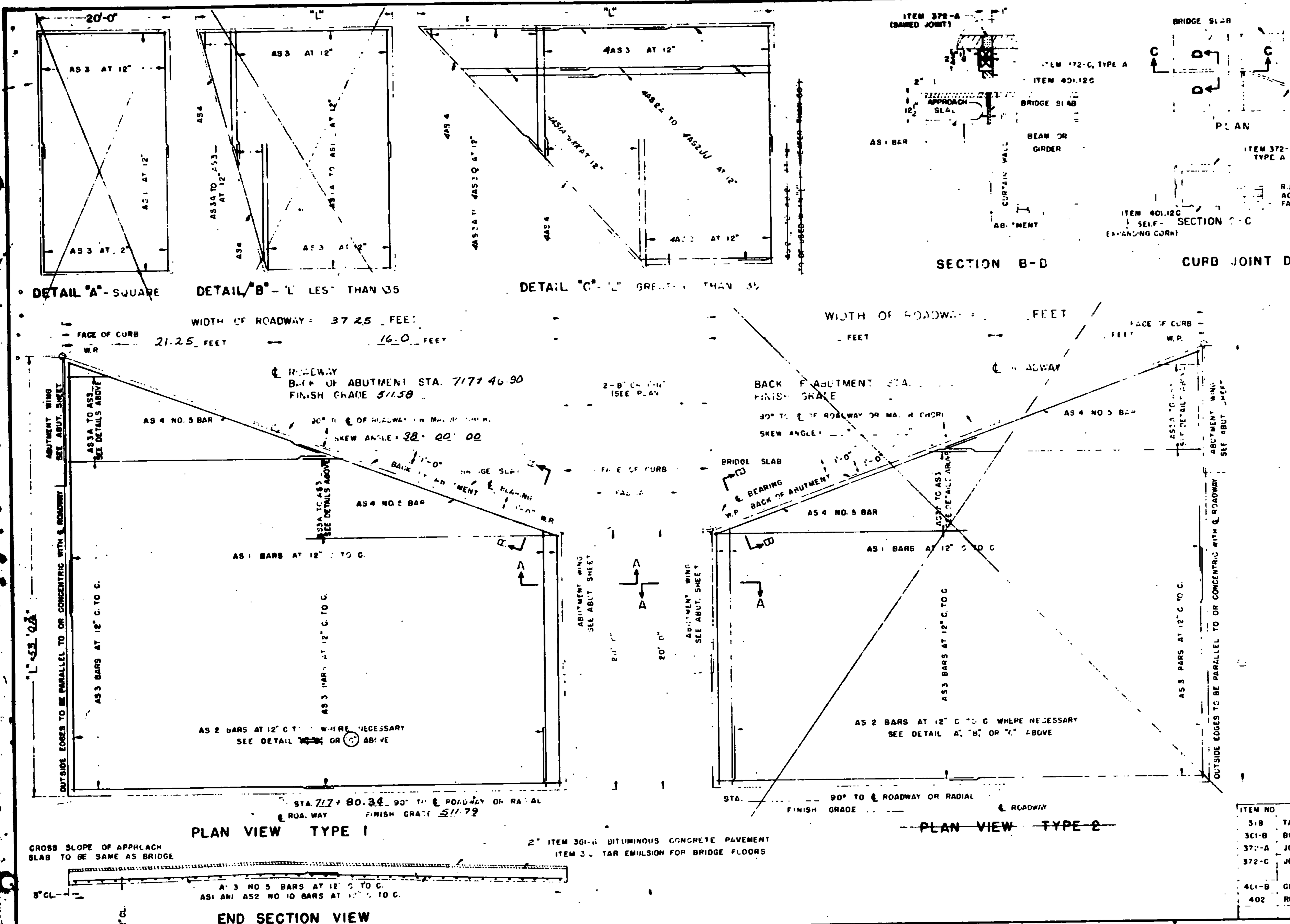
RECOMMENDED FOR APPROVAL: Lin Brown BRIDGE ENGINEER 2/4/65 DATE
RECOMMENDED FOR APPROVAL: R.H. Arnold ASSISTANT CHIEF ENGINEER 2/4/65 DATE
APPROVED BY: A.D. Bishop CHIEF ENGINEER 2/ /65 DATE

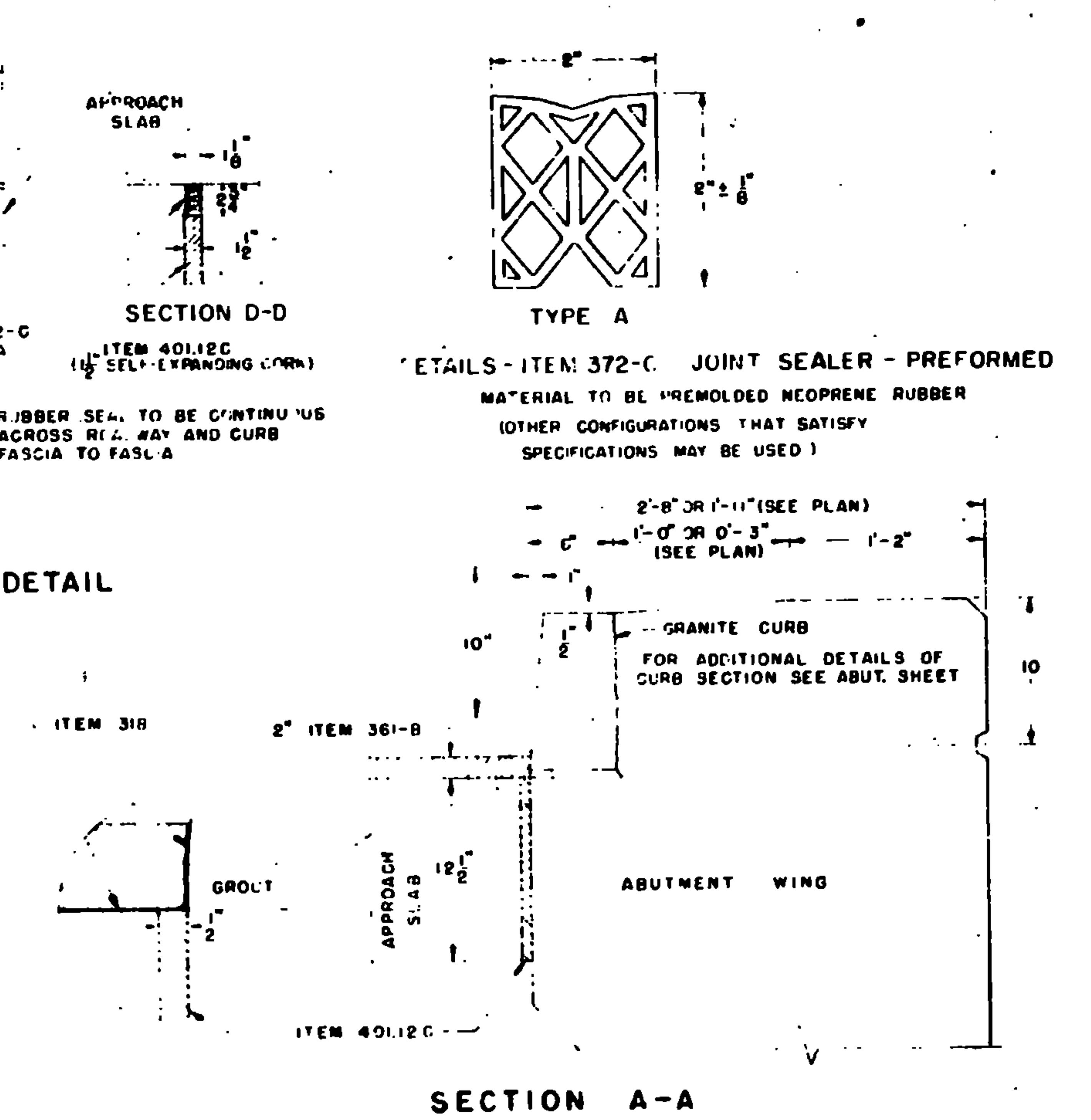
DETAILS OF APPROACH SLAB
FOR 37.25 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 717+0
LOCATION I 89 OVER VT. #132

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

SB-AS-65

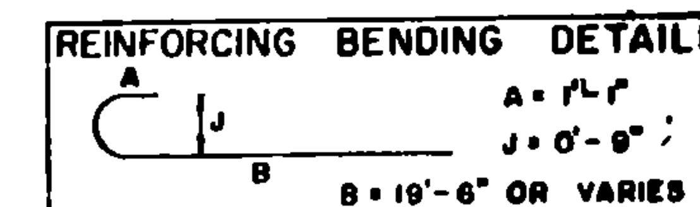




GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1964, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR HS 20-44 LOADING.
2. ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. ALL SPLICES SHALL BE A MINIMUM OF 41 BAR DIAMETERS.

REINFORCING BENDING DETAIL



DETAIL SHOWN IS FOR AS1 BAR. ALL OTHER BARS ARE TO BE STRAIGHT.

LIST OF QUANTITIES

ITEM NO.	ITEM	UNIT
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.
361-B	BITUMINOUS CONCRETE PAVEMENT	TONS
372-A	JOINT SEALER - HOT POURED	L.F.
372-C	JOINT SEALER - PREFORMED, TYPE A	L.F.
401-B	CONCRETE CLASS B	CY.
402	REINFORCING STEEL	LB.

IR-DECK (15), I-89, BR.#'S 15N & S
THIS SHEET FOR INFORMATION ONLY

PROJECT HARTFORD - SHARON
TOWN OF SHARON
ROUTE NO. I 89 STA. 717+0
I 89 OVER VT. #132
APPROACH SLAB #4

REVISIONS AND CORRECTIONS
1. DIMENSIONS OF JOINT FOR SEALER TYPE A REVISED. 4/15/65 W.B.T.
2. DIMENSIONS OF JOINT SEALER TYPE B REVISED 6/23/65 W.B.T.
3. JOINT BETWEEN CURB AND SLAB REVISED, BITUMINOUS CONCRETE REVISED TO 2", QUANTITY TOTALS REMOVED. 12/7/65 W.B.T.

DRAWN BY: W.B.T. Jan. 1965
TRACED BY: W.B.T. Jan. 1965
CHECKED BY: WMS Feb. 1965
RECOMMENDED FOR APPROVAL: [signature] BRIDGE ENGINEER 2/4/65 DATE
RECOMMENDED FOR APPROVAL: R.H. Arnold ASSISTANT CHIEF ENGINEER 2/4/65 DATE
APPROVED BY: A.D. Bishop CHIEF ENGINEER 2/4/65 DATE

DETAILS OF APPROACH SLAB FOR 37.25 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 717+0
LOCATION I 89 OVER VT. #132

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE
SB-AS-65

NOT TO SCALE
IN CHARGE R. Oatley
DESIGNED BY [illegible] CHECKED BY [illegible]
PROJECT NO. [illegible]

PROPERTY LINE FENCE w/STEEL POSTS, ITEM 583-B
Ramp A 11+00~15+00 Rt.
Ramp D 6+00~ 9+77 Rt.
Ramp B 8+00 Rt. - 3223+00 S.B. Lt.
Ramp C 11+00 Rt. - 3223+00 N.B. Rt.

* THREE CABLE GUARD RAIL w/STEEL POSTS, ITEM [redacted] 542
'D' 9+32 Lt. - 28+95 Rte. 5 Lt.
'C' 12+00 Lt. - 28+95 Rte. 5 Rt.
'A' 15+00 Rt. - 35+50 Rte. 5 Lt.
'A' 11+00 Lt. - 31+45 Rte. 5 Lt.
'A' 13+50 Lt. - 15+00 Lt.
U.S. Rte. 5 Rt. 31+45 - 32+01

SUB-BASE of SAND, ITEM 202
3211+00 - 3212+50 SB
3211+00 - 3213+00 NB
3216+00 - 3223+00 NB
3218+50 - 3223+00 SB
US Rte. 5 25+50 - 28+95

EXCAVATION & REMOVAL of ROAD SURFACE on ROADWAYS, ITEM 118-A
25+50 - 26+05
27+40 - 29+40

STONE FILL for SLOPE PROTECTION ITEM 522
11+38 Ramp 'C' Rt.

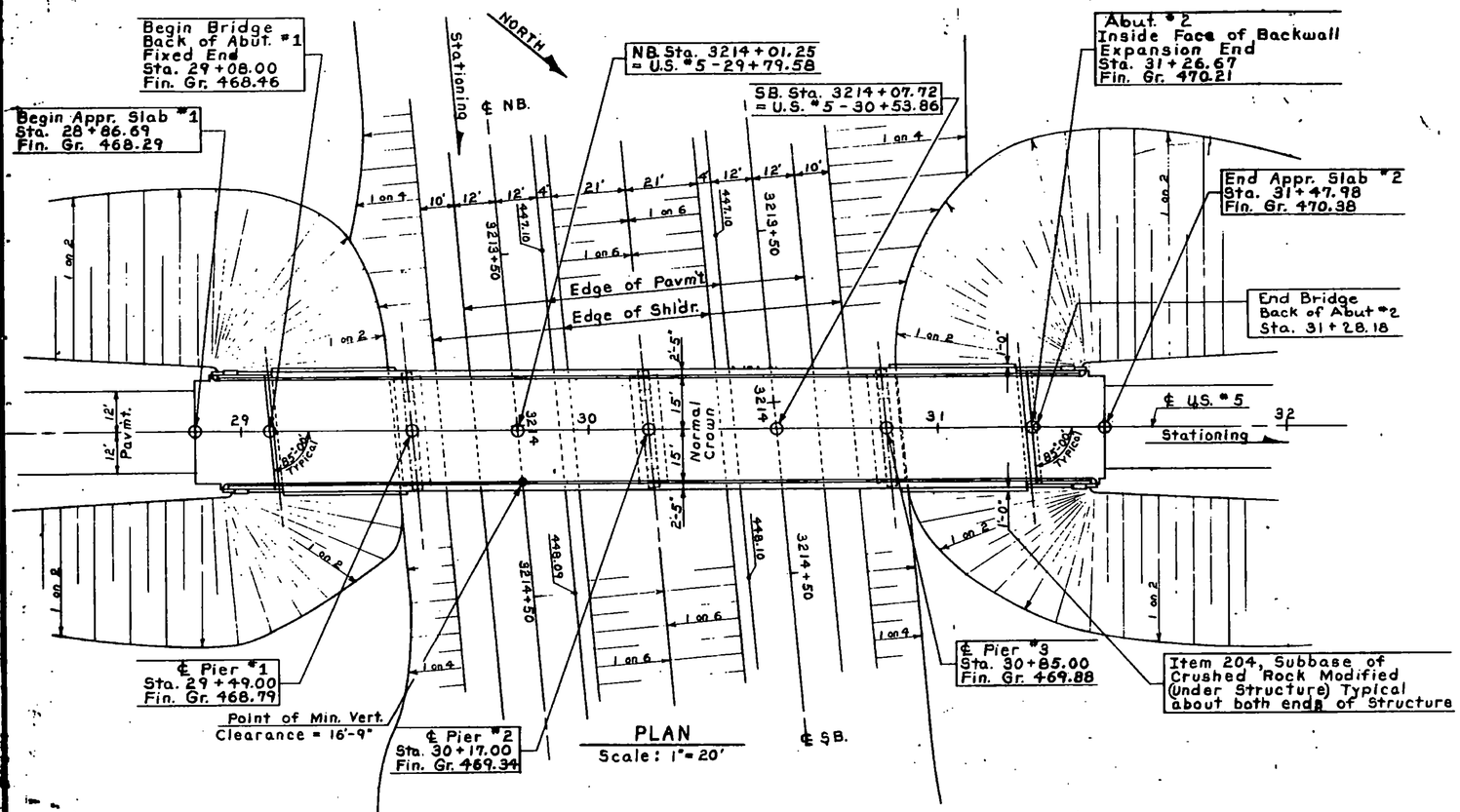
*STANDARD STEEL BEAM GUARD RAIL w/STEEL POSTS ITEM [redacted] 545-A
3213-36 ~ 3214+65 N.B. Lt. & Rt.
3213-41 ~ 3214+70 S.B. Lt. & Rt.

*GRANITE SLOPE EDGING ITEM 556-A
Ramp A 9+16 Rt. ~ 11+76.5 Rt. (U.S.5 35+33.6 Lt.)
Ramp A 10+00 Lt. ~ 10+83 Lt. (U.S.5 34+44 Lt.)
Ramp A 10+83 Lt. ~ U.S.5 33+55 Lt.
U.S.5 33+55 ~ 34+44 Lt.
Ramp B 2+01 ~ 2+52 Lt.
S.B. 3220+20 ~ 3220+72 Lt.
Ramp C 9+37 Rt. ~ 11+40 Rt. (U.S.5 25+51 Rt.)
Ramp C 10+17.5 Lt. ~ 10+86 Lt. (U.S.5 26+37)
U.S.5 26+37 ~ 27+15 Rt.
Ramp C 10+86 Lt. ~ U.S.5 27+15 Rt.

NOTE: U.S. #5
One 1 1/4" course of Bituminous Concrete, Item 361-B, modified, is to be split
Construction.
Crushed Stone Shoulders, Item 303, Bituminous Material, Item 315, modified, 1 1/4" course of Bituminous Concrete, 361-B, Modified, are to be part of
All other items on U.S. #5 are to be Stage I Construction.

IR-DECK (15) U.S. 5, BR. #58

THIS SHEET FOR INFORMATION ONLY



LIST OF BRIDGE SHEETS

BRIDGE STANDARDS

STD. DWGS. : SCB-30-62, SCB-D1-62, SCB-D2-62, SCB-D4-62, SCB-D6-62, SCB-D7-62, SCB-D8-62, SCB-D9-62, detail (A), SCWP6-30-62, Sheets #1 and #4; SB-56-62, Sheets #1 and #2.

REFERENCE SHEETS

INTERSTATE AND U.S. Rte. 5 PLAN (Scale: 1"=50')
PROFILE OF INTERSTATE, NB AND SB, STA. 3210+00 THRU 3224+00
PROFILE OF U.S. Rte. 5, STA. 25+00 THRU 35+50
INTERSTATE SECTIONS (2 Sheets), STA. 3212+50 THRU 3214+00
U.S. Rte. 5 SECTIONS (1 Sheet), STA. 28+50 THRU 31+00

NOTES

① For General Notes see Std. Dwgs. SCB-D1-62

② The superstructure is of non-composite, WF beam, continuous for a 30-ft. roadway. The superstructure deck details in accordance with Std. Dwg. SCB-30-62.

③ Bridge railing is detailed for aluminum. If steel railing substituted in lieu of aluminum, post spacing must be not to exceed 10'-0" in accordance with Std. Dwg. Sheet #1 and #4. For rail expansion joint layout see Sh...

④ After the superstructure steel has been erected, profiles of top of the beams shall be taken under the direction of Engineer to determine the final grade.

⑤ All exposed edges of concrete in the superstructure, abutments and piers shall be chamfered 1" by 1".

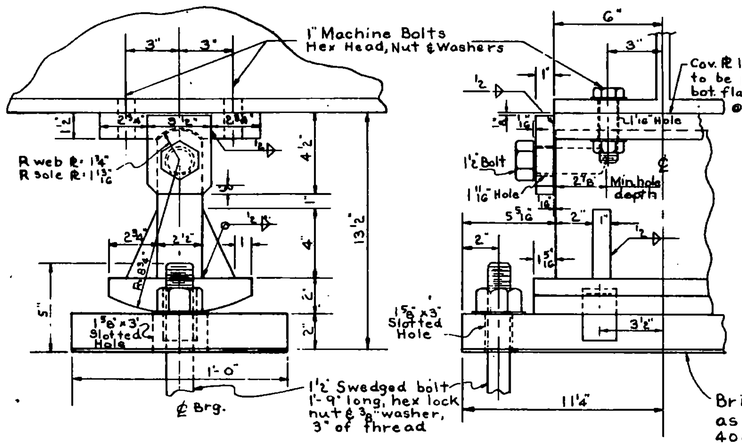
⑥ The granite bridge curb layout details are shown on Sheet BR-204.

⑦ Where granular material is indicated around bridge abutments, rock fill, if available, shall be substituted except in the area where piles are driven. Wherever materials from excavation are used for embankments requiring Granular Material, they shall be paid for as indicated under Item 161, Excavation.

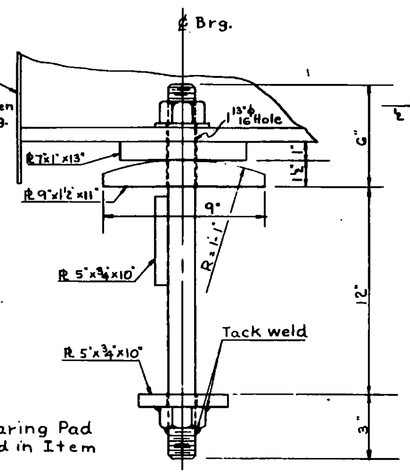
⑧ Beam Stresses:
Structural Steel: 20000 psi
Reinforcing Steel: 20000 psi
Concrete: f'c = 3000 psi

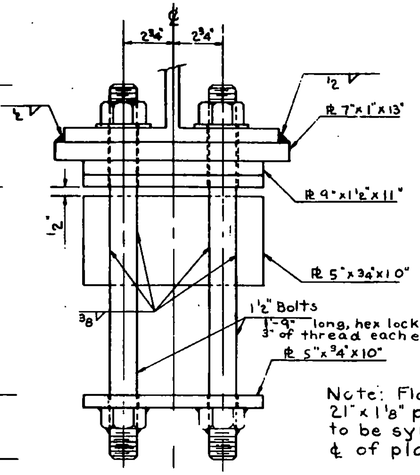
Stage I Construction

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
WEATHERSFIELD
TOWN OF WEATHERSFIELD - HARTLAND
ROUTE No. 5 & 131 LOG STA.

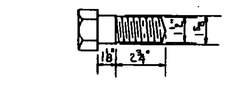


Expansion Brg. Detail
Scale 3"=1'-0"

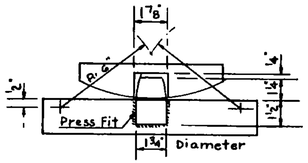




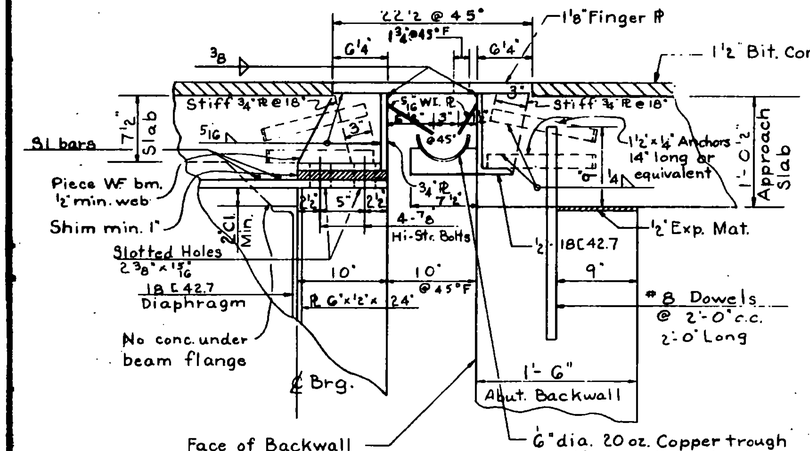
Note: Flame cut from 21"x1'8" plate. Finger are to be symmetrical about ℄ of plate.



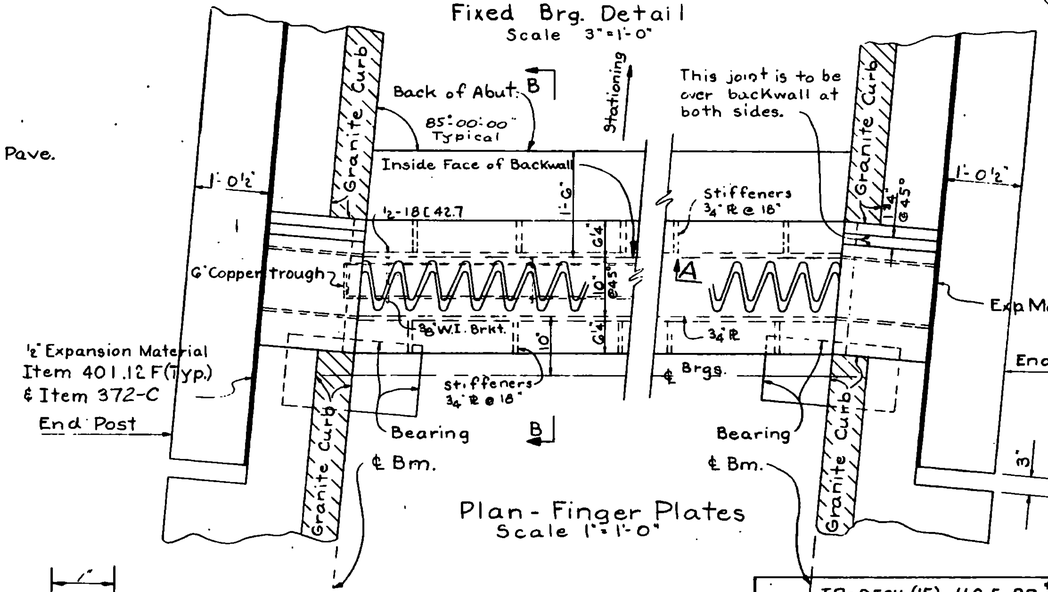
Bolt Detail
Scale 3"=1'-0"



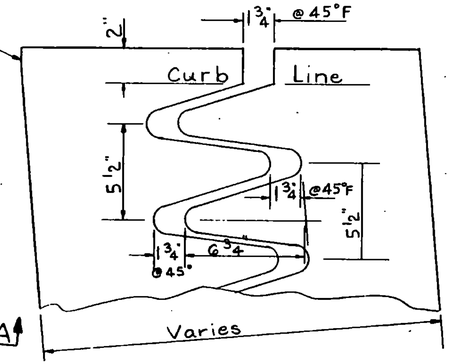
Pintle Detail
Scale 3"=1'-0"



Section B-B
Scale 1½"=1'-0"

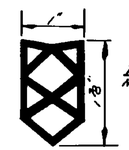


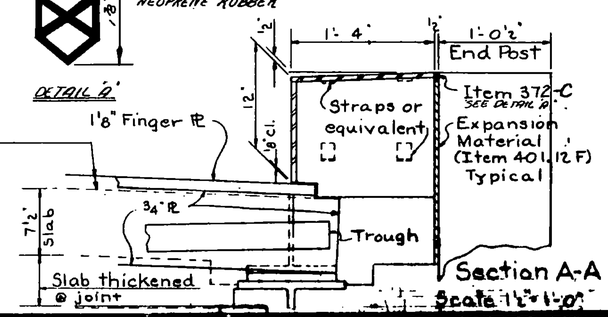
Plan - Finger Plates
Scale 1"=1'-0"



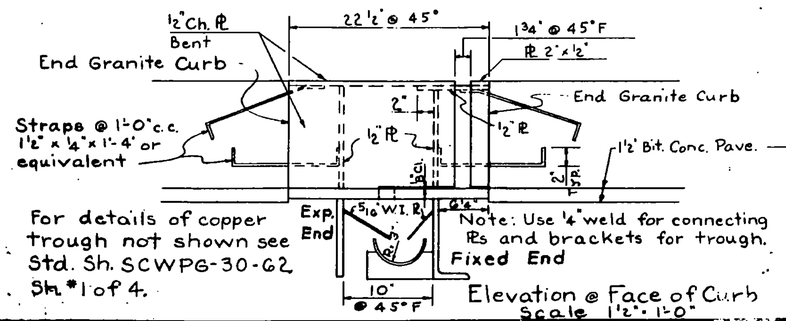
Finger Plate Detail
Scale 3"=1'-0"

Notes:
1. For details of Exp. Jt. Assembly not shown see Std. Sh. SCWPG-30-62, Sh. 4 of 4.
2. For details of Fixed Bearings not shown see Std. Sh. SCB-D8-62.
3. Exp. Bearings to be set vertical at 45° F.
4. For layout details of 6" Copper Trough and 4" dia. Wrought Iron drain pipe see Std. Dwg. SCWPG-30-62, Sheet #1.
5. Preformed Neoprene Rubber Joint Material, Item 372-C Shall be used wherever Item 373 is indicated in the standards. Stage I Construction





Section A-A
Scale 1½"=1'-0"



Elevation @ Face of Curb
Scale 1½"=1'-0"

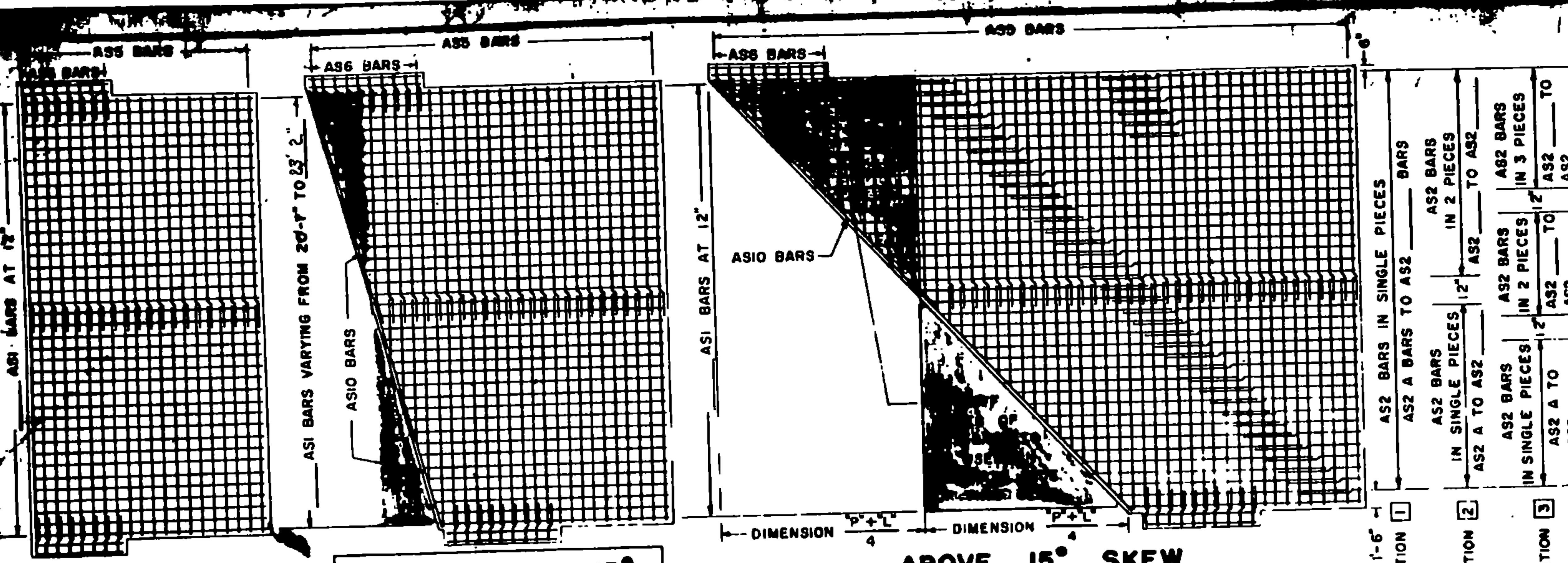
For details of copper trough not shown see Std. Sh. SCWPG-30-62 Sh. #1 of 4.

IR-DECK (15) U.S. 5, BR. #58A
THIS SHEET FOR INFORMATION ONLY

ITEM NO.	ITEM	UNIT	NET		TOTAL	FINAL
	CHAN. EXCAV. OF EARTH	C.Y.				
	CHAN. EXCAV. OF ROCK	C.Y.				
	UNCLASS. CHAN. EXCAV.	C.Y.				
	STRUCT. EXCAV.	C.Y.				
	CONC. CLASS AA (MOD.)	C.Y.				
	CONC. CLASS B (MOD.)	C.Y.				
	REINF. STEEL	LBS.				
	ASPHALTIC-ASB. COATING	S.Y.				
	TREATED TIMBER PILING	L.F.				
	SPLICES FOR STEEL PILING	EA.				
	STEEL PILING	L.F.				
	UNTREATED TIMBER PILING	L.F.				

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Weathersfield Windsor-Hartland
ROUTE NO. I 91 LOG STA.
Details of Brgs. & Exp. Jt. Assembly
U.S. Rte 5 over I 91
SCALE As Noted
SURVEYED BY Penniman
DRAWN BY A.J.C. CHECKED BY F.W.C.
PROJECT NO. I 91-2



SQUARE SKEWED UP TO 15° ABOVE 15° SKEW

30' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10	17'-2"	AS3	STR.	
2	10	16'-11"	AS4	STR.	
36	5	3'-6"	AS6	STR.	
18	5	5'-0"	AS7	S6	
2	5	15'-6"	AS8	STR.	
2	5	15'-3"	AS9	STR.	
SQUARE					
30	10	20'-7"	AS1	1	
20	5	29'-6"	AS5	STR.	
SKEWED UP TO 15°					
30	10	20'-9½" AVE.	AS1	1	1.
21	5	29'-6"	AS5	STR.	2.
ALL SKEWED SPANS					
1	5	29'-6"	AS10	STR.	
ABOVE 15° SKEW					
30	10	20'-7"	AS1	1	
29	10	AVE.	AS2	STR.	4.
	5	29'-6"	AS5	STR.	2.

38' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
38	10	20'-7"	AS1	1	
40	5	19'-9"	AS5	STR.	
SKEWED UP TO 15°					
38	10	AVE.	AS1	1	1.
	5	19'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
38	10	20'-7"	AS1	1	
37	10	AVE.	AS2	STR.	4
	5	19'-9"	AS5	STR.	3.

42' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
42	10	20'-7"	AS1	1	
40	5	21'-9"	AS5	STR.	
SKEWED UP TO 15°					
42	10	AVE.	AS1	1	1.
	5	21'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
42	10	20'-7"	AS1	1	
41	10	AVE.	AS2	STR.	4.
	5	21'-9"	AS5	STR.	3.

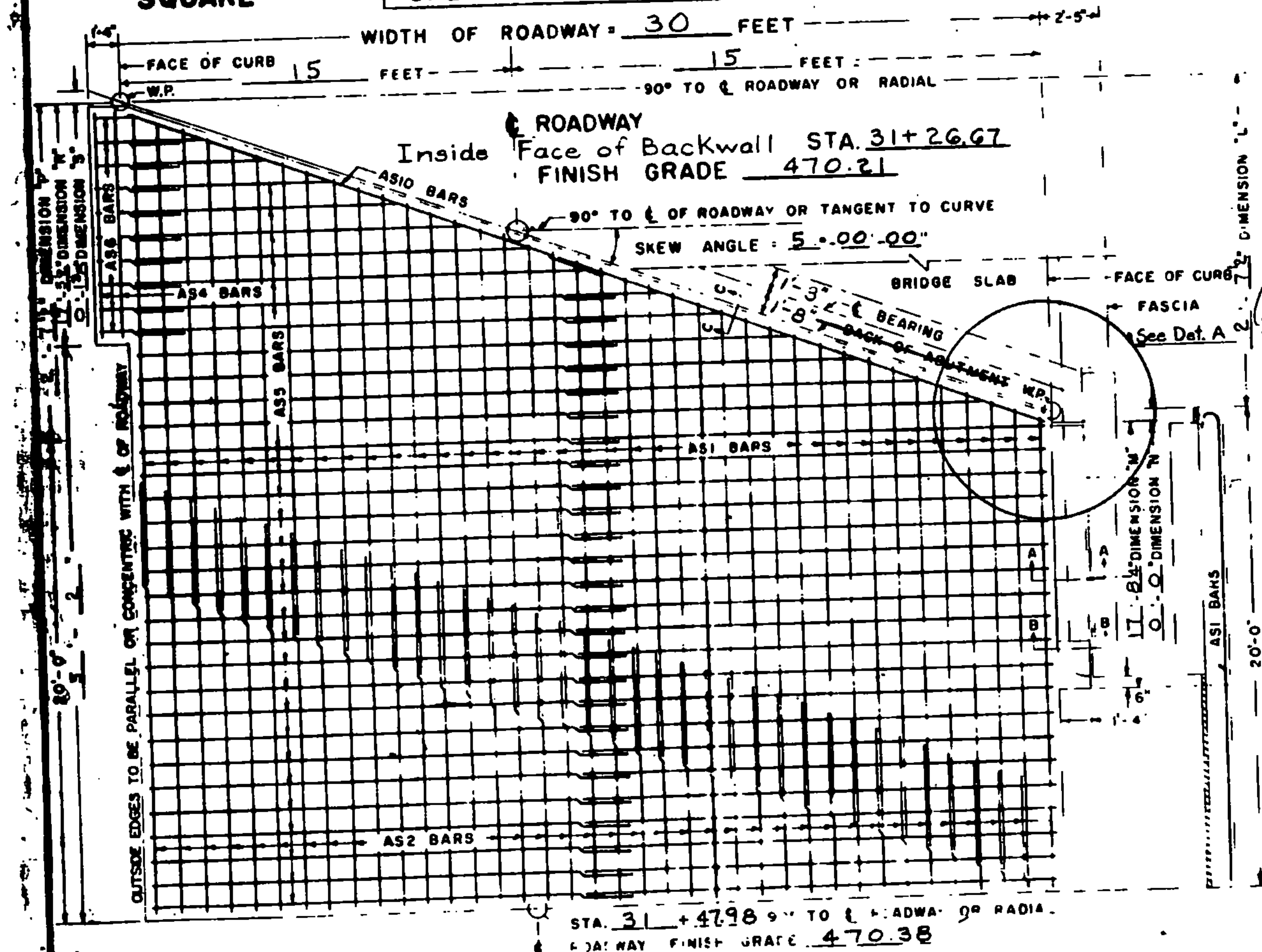
44' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
44	10	20'-7"	AS1	1	
40	5	22'-9"	AS5	STR.	
SKEWED UP TO 15°					
44	10	AVE.	AS1	1	1.
	5	22'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
44	10	20'-7"	AS1	1	
43	10	AVE.	AS2	STR.	4.
	5	22'-9"	AS5	STR.	3.

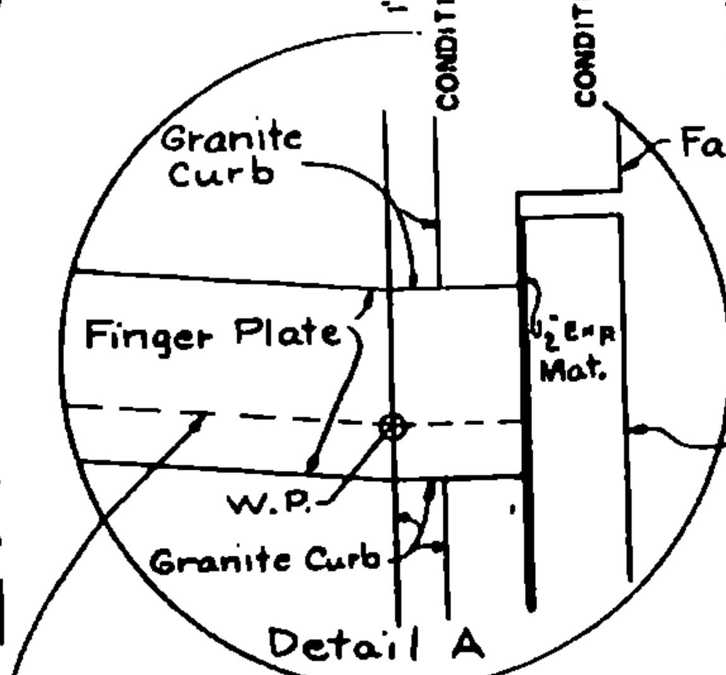
NO. PIECES	SIZE	LENGTH	MARK	TYPE
SQUARE OR SKEWED				
2	10		AS3	STR.
2	10		AS4	STR.
	5	3'-6"	AS6	STR.
	5	5'-0"	AS7	S6
2	5		AS8	STR.
2	5		AS9	STR.
SQUARE				
	10	20'-7"	AS1	1
	5		AS5	STR.
SKEWED UP TO 15°				
	10	AVE.	AS1	
	5		AS5	
ALL SKEWED SPANS				
	5		AS10	STR.
ABOVE 15° SKEW				
	10	20'-7"	AS1	
	10	AVE.	AS2	
	5		AS5	

REMARKS: ● AS1 BAR "B" DIMENSION VARIES FROM 9'-6" TO 22'-1" ● 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 DETAILED. 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 1961. DESIGNED FOR H20-S16

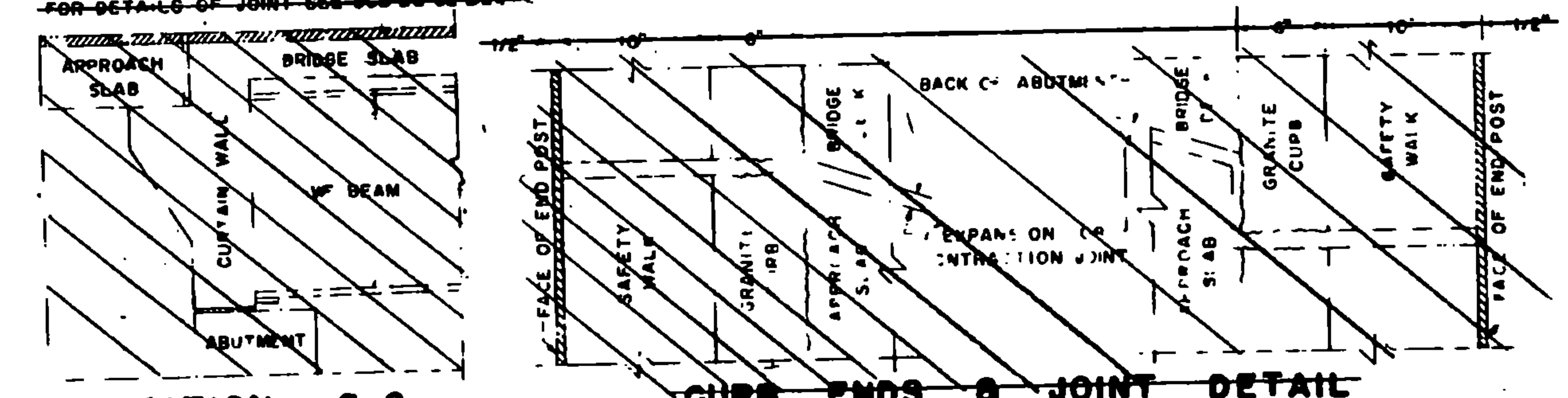


PLAN VIEW



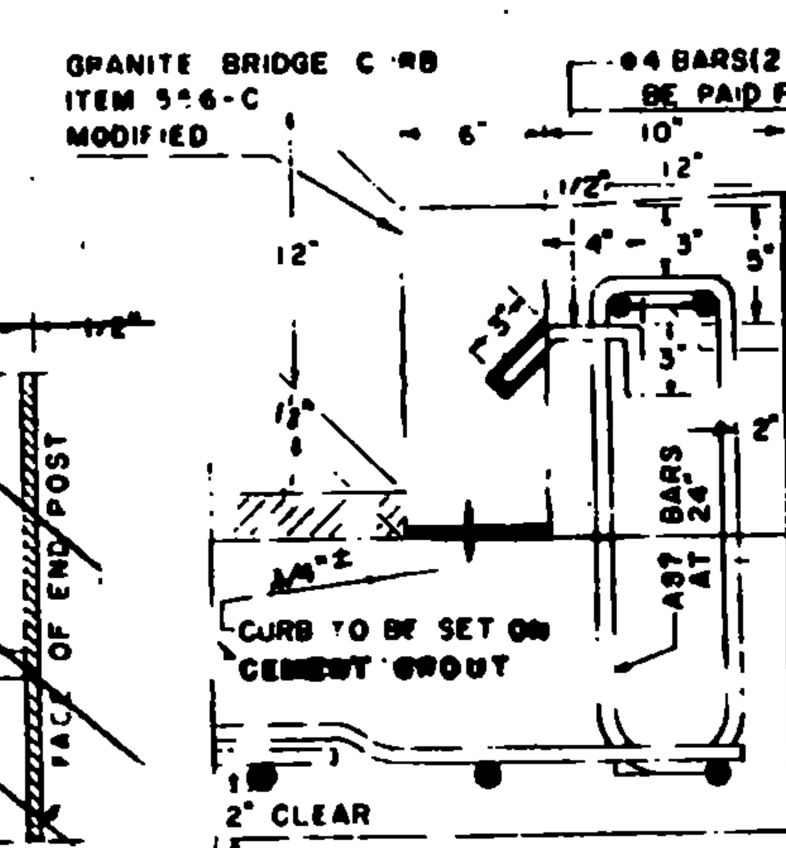
Detail A

For details of joint see sh. BR-205 and Std. Sh. SCWPG-30-62, sh. #4

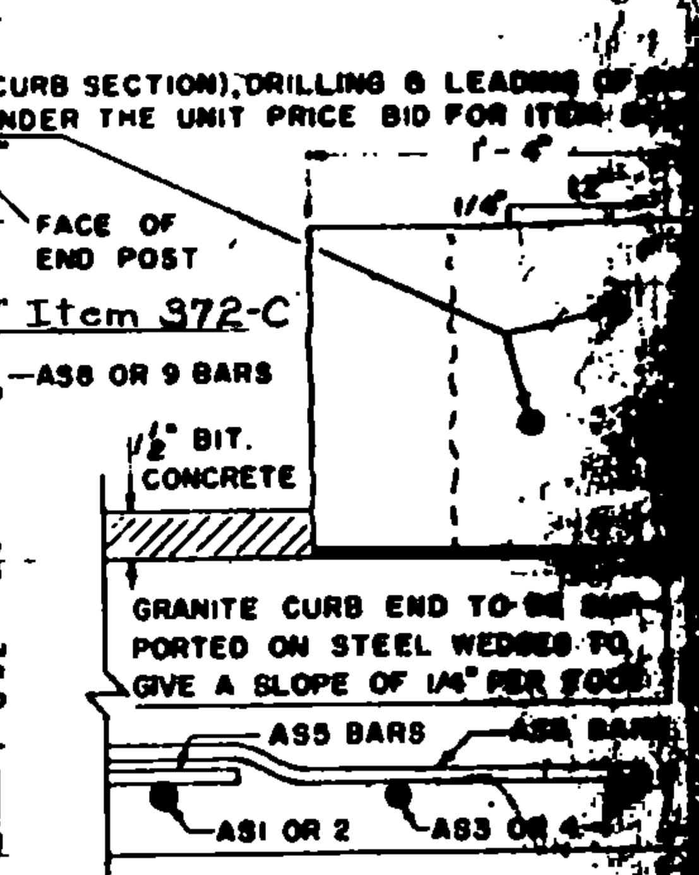


~~SECTION C-C~~ ~~SCALE 1/2" = 1'-0"~~

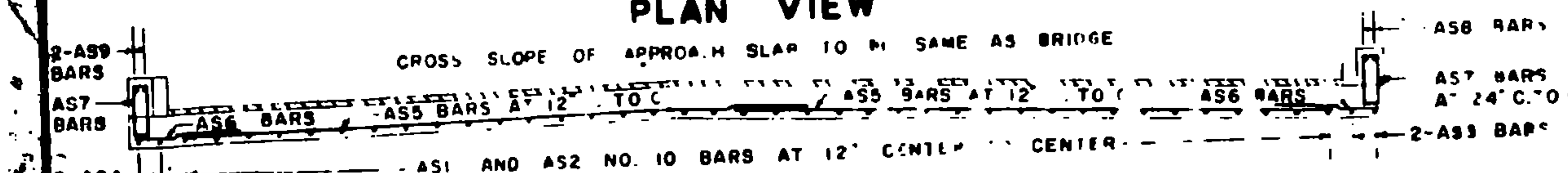
CURB ENDS & JOINT DETAIL ~~SCALE 1 1/2" = 1'-0"~~



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



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



END SECTION VIEW

DETAILS OF REINFORCING BARS

TYPE 1: A = 1'-1", J = 0'-9", B = 19'-6" OR VARIES

TYPE S6: A = 0'-6", B = 1'-9", C = 0'-6", D = 1'-9", G = 0'-6"

ITEM NO.	ITEM	UNIT	TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	29	
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS	6	
401-B	CONCRETE CLASS B (MOD.)	CY.	28	28
402	REINFORCING STEEL	LB	~~3950~~	3943
556-C	GRANITE BRIDGE CURB (MOD.)	LF	35	35

REINFORCING STEEL

BAR No.	A NO. PIECES	B LENGTH	C WEIGHT PER FT	A x B x C WEIGHT IN LBS.
AS1	30	20'-9½" AVE.	4.303	2684.
AS2			4.303	
AS3	2	17'-2"	4.303	148.
AS4	2	16'-11"	4.303	146.
AS5	21	29'-6"	1.043	646.
AS6	36	3'-6"	1.043	131.
AS7	18	5'-0"	1.043	94.
AS8	2	15'-6"	1.043	32.
AS9	2	15'-3"	1.043	32.
AS10	1	29'-6"	1.043	31.
TOTAL WEIGHT =				3944

QUANTITY COMPUTATION

W = WIDTH OF ROADWAY W = 30'
Z = 20 + DIMENSION ("P"+"L")/4 Z = 21.3125'
T = DIMENSION T = 17.5729

BITUMINOUS CONCRETE = W x Z x 0.0092 = TONS 30 x 21.3125 x 0.0092 = 5.88 TONS

TAR EMULSION = W x Z x 0.0444 = GALLONS 30 x 21.3125 x 0.0444 = 28.39 GALLONS

CONCRETE CLASS B = W x Z x 0.0386 + T x 0.1029 + (T − 1.8333) x 0.0733 = CUBIC YARDS
[30 x 21.3125 x 0.0386] + [17.5729 x 0.1029] + [(17.5729 − 1.8333) x 0.0733] = 27.64 CUBIC YARDS

GRANITE BRIDGE CURB = 2(T + C − 3") = LINEAR FEET − 1.04' 2(17.5729 + 0.28) − 1.04' = 34.61 LINEAR FEET

BAR LENGTHS: AS3 BARS = DIMENSION "M" − 0'-6"
AS4 BARS = DIMENSION "R" − 0'-6"
AS6 BARS = 3'-6"
AS7 BARS = 5'-0"
AS8 BARS = DIMENSION "M" − 2'-2"
AS9 BARS = DIMENSION "R" − 2'-2"

Stage I Const.

REVISIONS AND CORRECTIONS

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 — Bridge Engineer, Date 12/1/62
Recommended For Approval — Asst. Chief Engineer
Chief Engineer

DETAILS OF APPROACH SLAB #2 FOR 30 FOOT BRIDGE

(WIDTH)

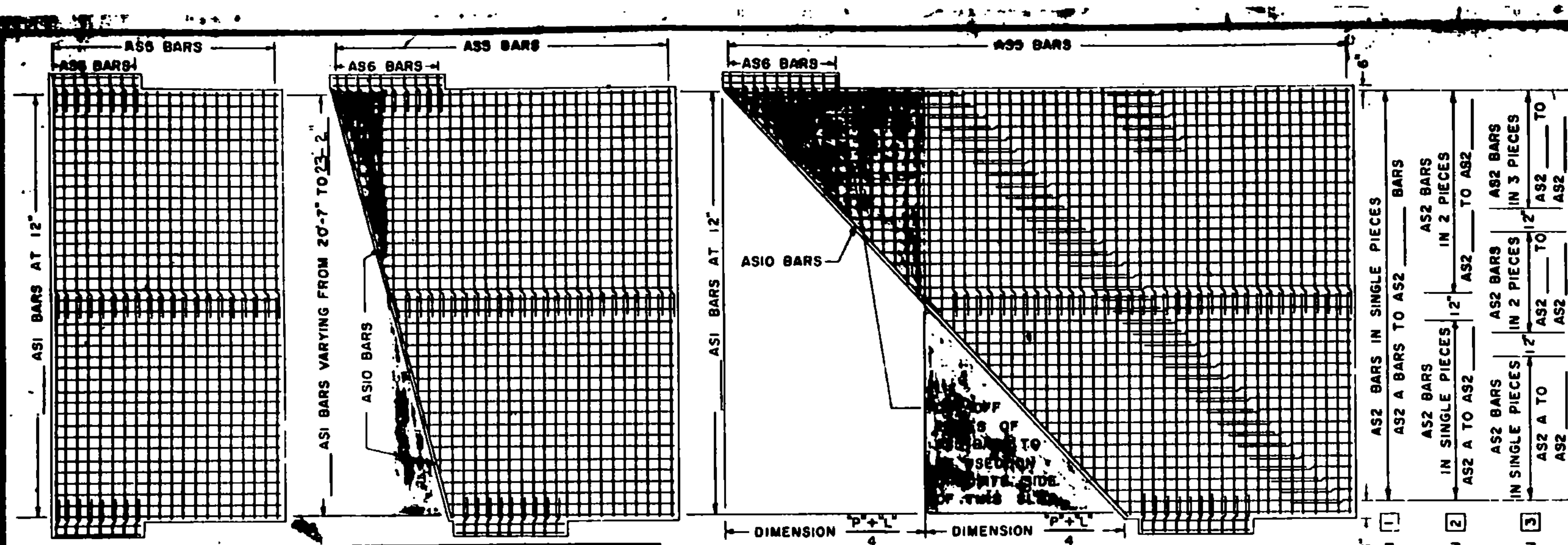
TO BE USED FOR BRIDGE AT STATION 30+17.34

LOCATION U.S. Route 5 over I 91

Call 3950

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

TOWN OF ~~Windsor~~ Weathersfield
ROUTE NO. I 91



30' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10	15'-0"	AS3	STR.	
2	10	14-10	AS4	STR.	
32	5	3'-6"	AS6	STR.	
16	5	5'-0"	AS7	S6	
2	5	13-4	AS8	STR.	
2	5	13-2	AS9	STR.	
SQUARE					
30	10	20'-7"	AS1	1	
20	5	29'-6"	AS5	STR.	
SKEWED UP TO 15°					
30	10	20'-9½" AVE.	AS1	1	1.
21	5	29'-6"	AS5	STR.	2.
ALL SKEWED SPANS					
1	5	29'-6"	AS10	STR.	
ABOVE 15° SKEW					
30	10	20'-7"	AS1	1	
29	10	AVE.	AS2	STR.	4.
	5	29'-6"	AS5	STR.	2.

38' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
38	10	20'-7"	AS1	1	
40	5	19'-9"	AS5	STR.	
SKEWED UP TO 15°					
38	10	AVE.	AS1	1	1.
	5	19'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
38	10	20'-7"	AS1	1	
37	10	AVE.	AS2	STR.	4.
	5	19'-9"	AS5	STR.	3.

42' ROADWAY

NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
42	10	20'-7"	AS1	1	
40	5	21'-9"	AS5	STR.	
SKEWED UP TO 15°					
42	10	AVE.	AS1	1	1.
	5	21'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
42	10	20'-7"	AS1	1	
41	10	AVE.	AS2	STR.	4.
	5	21'-9"	AS5	STR.	3.

44' ROADWAY

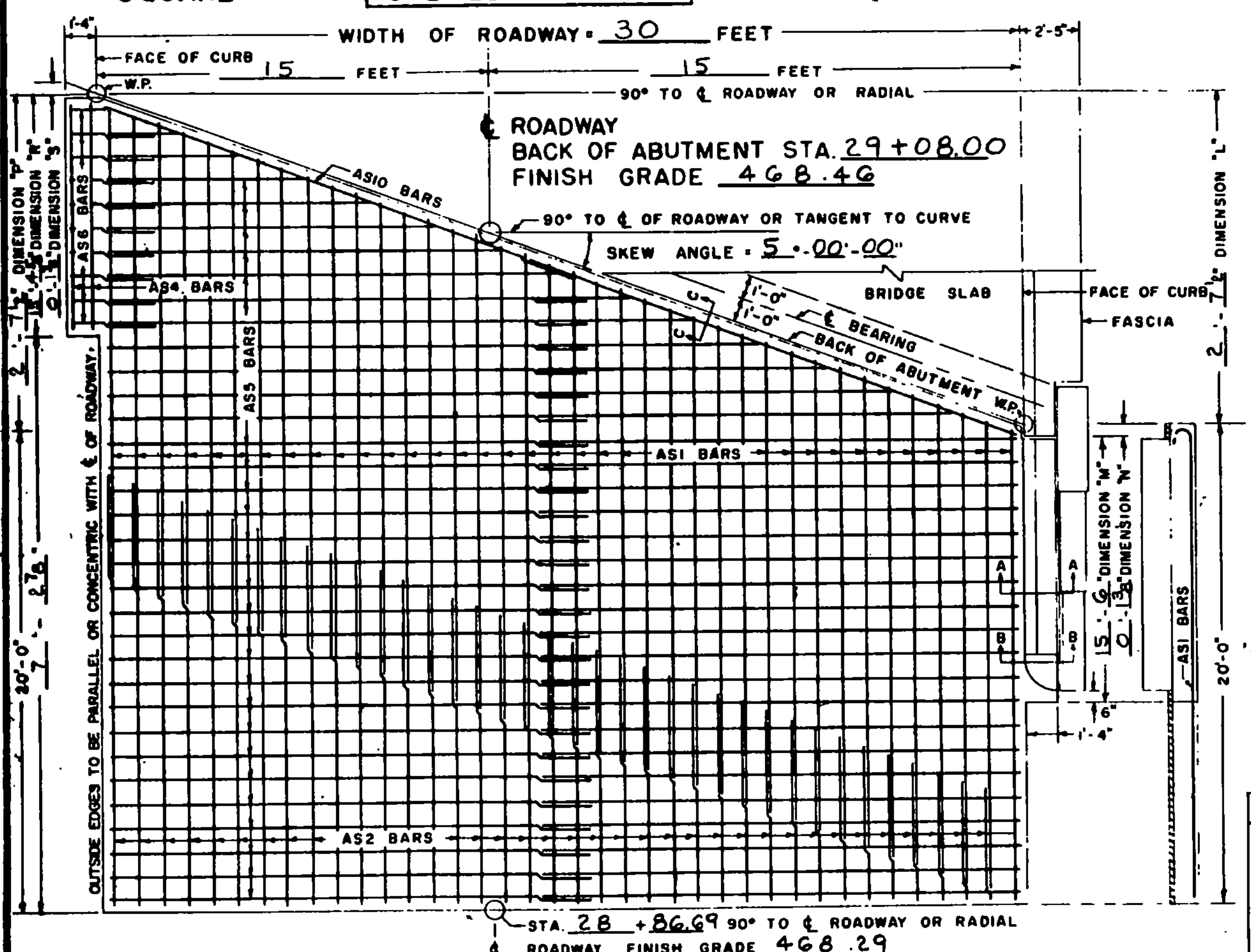
NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	
2	10		AS4	STR.	
	5	3'-6"	AS6	STR.	
	5	5'-0"	AS7	S6	
2	5		AS8	STR.	
2	5		AS9	STR.	
SQUARE					
44	10	20'-7"	AS1	1	
40	5	22'-9"	AS5	STR.	
SKEWED UP TO 15°					
44	10	AVE.	AS1	1	1.
	5	22'-9"	AS5	STR.	3.
ALL SKEWED SPANS					
	5		AS10	STR.	
ABOVE 15° SKEW					
44	10	20'-7"	AS1	1	
43	10	AVE.	AS2	STR.	4.
	5	22'-9"	AS5	STR.	3.

____ ROADWAY

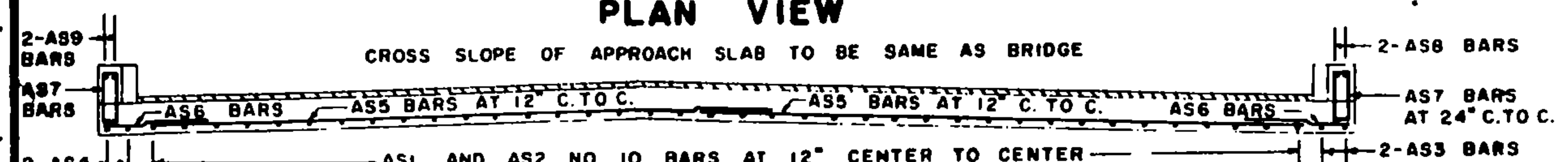
NO. PIECES	SIZE	LENGTH	MARK	TYPE	REMARKS
SQUARE OR SKEWED					
2	10		AS3	STR.	[illegible]
2	10		AS4	STR.	[illegible]
	5	3'-6"	AS6	STR.	[illegible]
	5	5'-0"	AS7	S6	[illegible]
2	5		AS8	STR.	[illegible]
2	5		AS9	STR.	[illegible]
SQUARE					
	10	20'-7"	AS1	1	[illegible]
	5		AS5	STR.	[illegible]
SKEWED UP TO 15°					
	10	AVE.	AS1	1	[illegible]
	5		AS5	STR.	[illegible]
ALL SKEWED SPANS					
	5		AS10	STR.	[illegible]
ABOVE 15° SKEW					
	10	20'-7"	AS1	1	[illegible]
	10	AVE.	AS2	[illegible]	[illegible]
	5		AS5	[illegible]	[illegible]

REMARKS: ● AS1 BAR "B" DIMENSION VARIES FROM 19'-6" TO 22'-1". ● 20 + DIMENSION ("P"+"L") ÷ 4 (IN FEET) = NUMBER OF PIECES. CUT BARS IN THE FIELD USING CUT OFF PIECES [illegible] 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 [illegible]

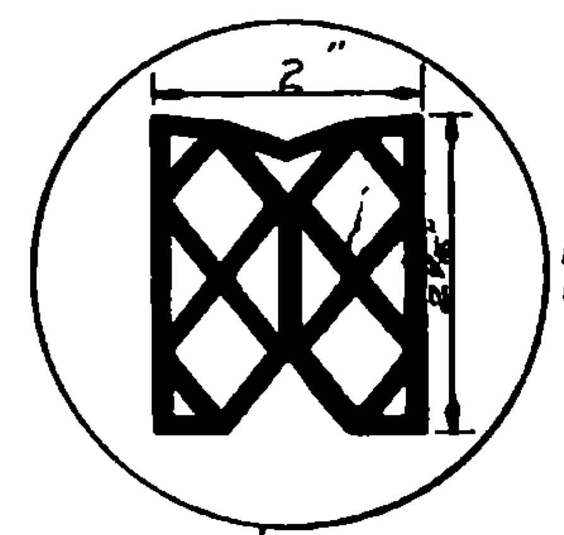
GENERAL NOTES: ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. WHEN A BAR LENGTH VARIES IN INCREMENTS EACH BAR MUST BE DETAILED. SPLICES SHALL BE 2'-1" FOR NUMBER 5 BARS, AND 4'-3" FOR NUMBER 10 BARS. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED JANUARY 1956, AND THE A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR H20-[illegible]

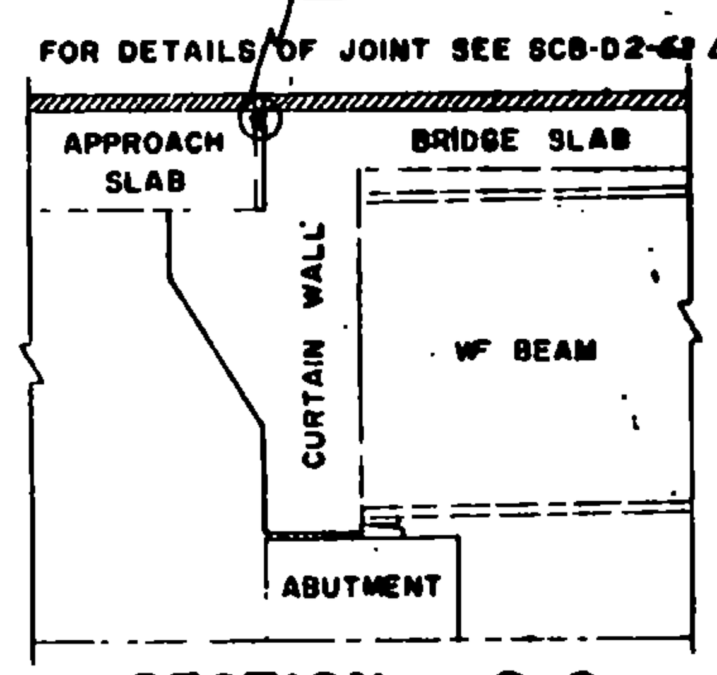


PLAN VIEW

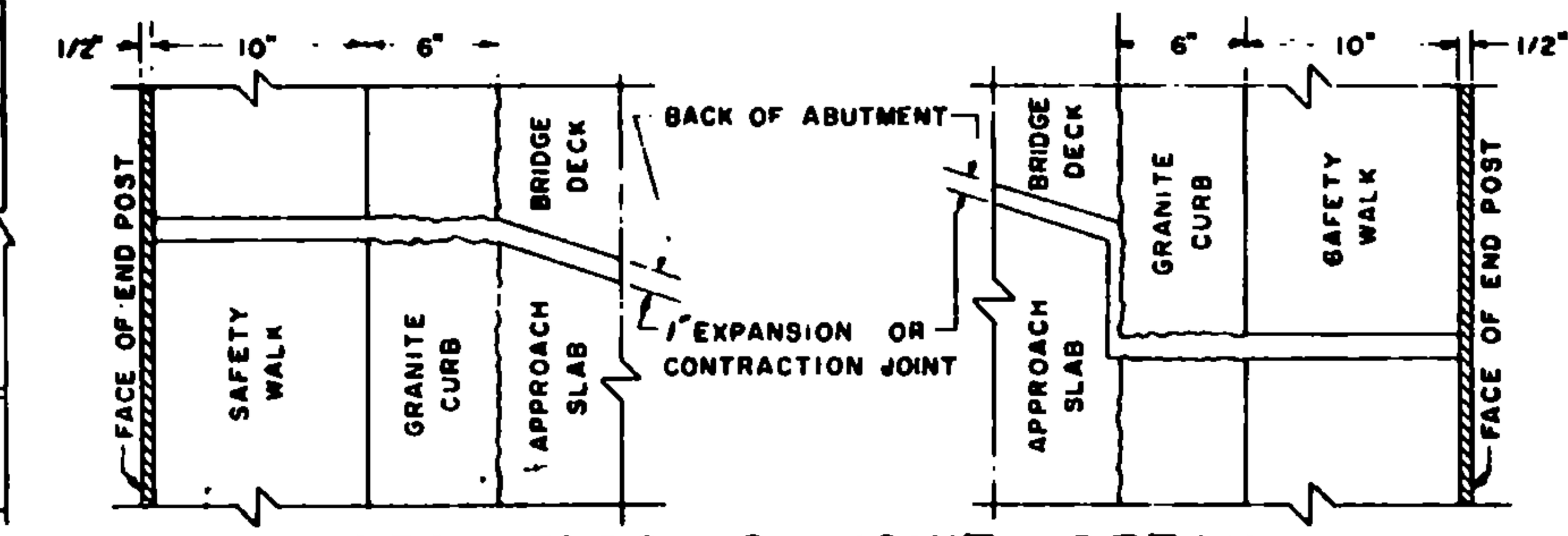


END SECTION VIEW

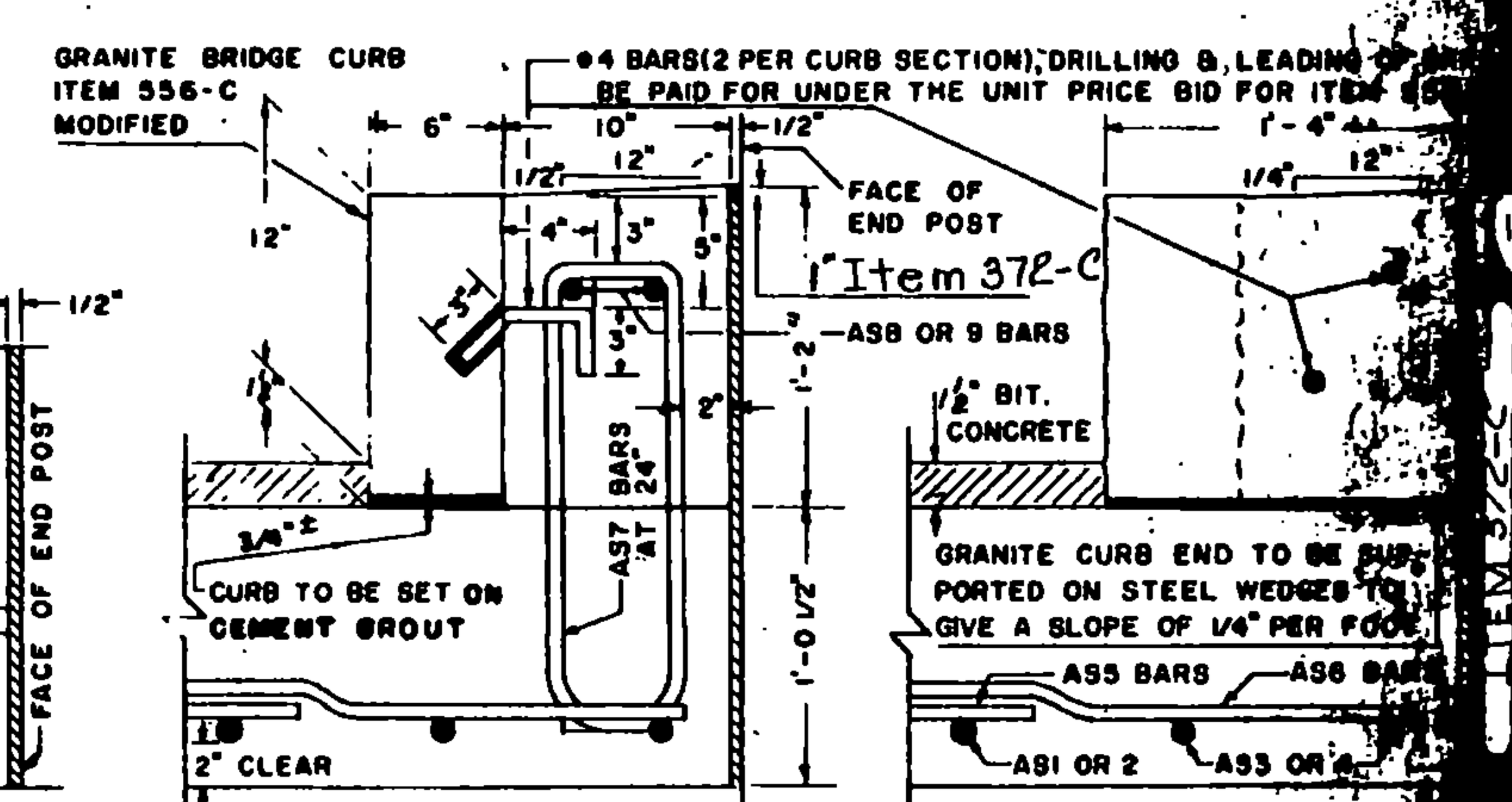




SECTION C-C
SCALE 1/2" = 1'-0"



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



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

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

DETAILS OF REINFORCING BARS

TYPE 1
A = 1'-1" J = 0'-9"
B = 19'-6" OR VARIES

TYPE S6
A = 0'-6"
B = 1'-9"
C = 0'-6"
D = 1'-9"
G = 0'-6"

ITEM NO.	ITEM	UNIT			TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.			29	
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TONS			6	
401-B	CONCRETE CLASS B (MOD.)	C.Y.			~~28~~	27
402	REINFORCING STEEL	LB.			~~3890~~	3889
556-C	GRANITE BRIDGE CURB (MOD.)	L.F.			~~32~~	31

REINFORCING STEEL

BAR NO.	A: NO. PIECES	B: LENGTH	C: WEIGHT PER FT.	A X B X C: WEIGHT IN LBS.
AS1	30	20-9½ Ave.	4.303	2684.
AS11	1	4-0	4.303	17.
AS3	2	15'-0"	4.303	129.
AS4	2	14'-10"	4.303	128.
AS5	21	29-6	1.043	646.
AS6	32	3'-6"	1.043	117.
AS7	16	5'-0"	1.043	83.
AS8	2	13'-4"	1.043	28.
AS9	2	13'-2"	1.043	27.
AS10	1	29'-6"	1.043	31.
TOTAL WEIGHT =				3890.

QUANTITY COMPUTATION

W = WIDTH OF ROADWAY Z = 20 + DIMENSION ("P"+"L")/4 T = DIMENSION [illegible]
W = 30' Z = 21.3125' T = 15.4427

BITUMINOUS CONCRETE = W x Z x 0.0092 = TONS 30 x 21.3125 x 0.0092 = 5.88 TONS

TAR EMULSION = W x Z x 0.0444 = GALLONS 30 x 21.3125 x 0.0444 = 28.39 GALLONS

CONCRETE CLASS B = W x Z x 0.0386 + T x 0.1029 + (T − 1.8333) x 0.0733 = CUBIC YARDS
[30 x 21.3125 x 0.0386] + [15.4427 x 0.1029] + [(15.4427 − 1.8333) x 0.0733] = 27.27 C.Y.

GRANITE BRIDGE CURB = 2(T + 0'-3") = LINEAR FEET 2(15.4427 + 0.25) = 31.39 LIN. FT.

BAR LENGTHS: AS3 BARS = DIMENSION "M" − 0'-6"
AS4 BARS = DIMENSION "R" − 0'-6"
AS6 BARS = 3'-6"
AS7 BARS = 5'-0"
AS8 BARS = DIMENSION "M" − 2'-2"
AS9 BARS = DIMENSION "R" − 2'-2"

Stage I Con[illegible]

REVISIONS AND CORRECTIONS

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] 12/7/62 Bridge Engineer Date
Recommended for Approval: [signature] Asst. Chief Engineer Date
Approved: [signature]

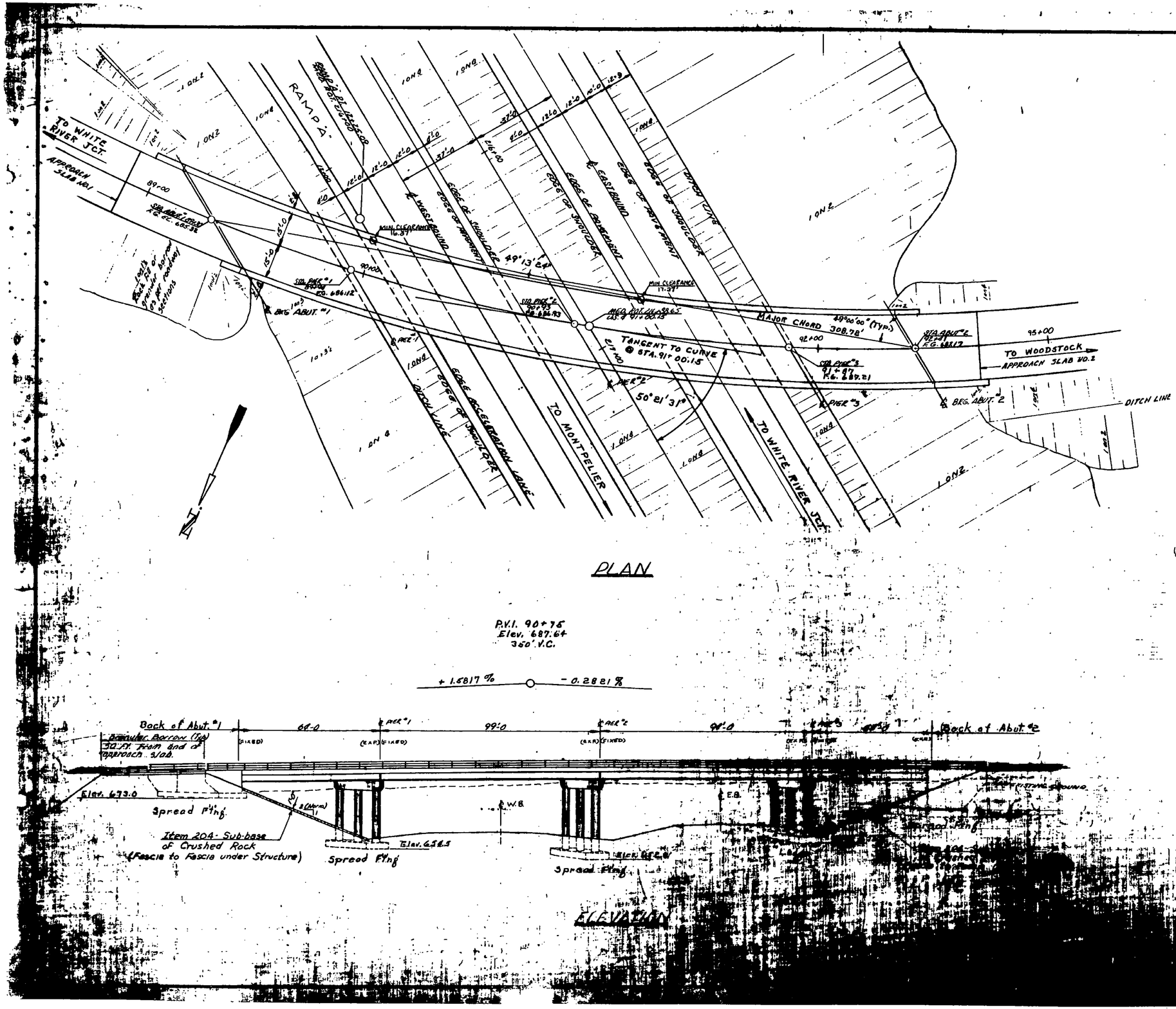
DETAILS OF APPROACH SLAB #1 FOR 30 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 30+17.84
LOCATION U.S. Route 5 over I 91

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

TOWN OF Weathersfield / Windsor
ROUTE NO. [illegible]

*Standard Steel Beam Guard Rail w/ Steel Posts
Item 545-A
Ramp A 11+32 Rt. - WB 216+45 Rt.
EB 219+ - 219+ Lt.
Jute Matting - Item 623
* Med. 218+50 - 220+50
* Med. 222+00 - 224+00
* Med. 225+50 - 227+50
EB. 217+46 - 217+54 Lt.
Bituminous Concrete Curb
Item 555
* W.B. 224+75 - 227+45 Rt.
* W.B. 227+45 - 228+50 Rt.
U.S. 4 88+92 - 89+02 Lt.
Three Cable Guard Rail W/ Steel Posts
Item 542
* W.B. 223+36 - 227+50 Rt.
U.S. 4 87+00 - 89+44 Rt.
U.S. 4 88+40 - 89+02 Lt.
U.S. 4 92+40 - 92+98 Lt.
U.S. 4 92+50 - 93+06 Rt.
* Paved Median Gutter
Item 554
212+46 - 212+50 Med.
Drilling and Presplitting of
Solid Rock, Item 125
EB 212+00 Rt. ~ 215+00 Rt.
WB 212+00 Lt. ~ 216+00 Lt.
Property Line Fence w/
Steel Posts, Mod. - Item 588-II
E.B. 212+18 - 213+88 Lt.
Ramp A 9+50 - 11+50 Rt.
E.B. 218+00 - 221+50 Lt.
W.B. 215+30 - 217+50 Rt.
Plank Guard Rail, Item 540 (Barrier)
E.B. 219+90 Lt. (16')
Note:
Property Line Fence @
Sta 219+30 Lt to be so
Constructed as to clear
Garage by at Least 4 Feet
Vt. Grid
N
Demolition & Disposal of Building, Item 580
214+50 Rt. - #25
215+50 ℄ - #24
217+80 ℄ #27A
217+83 Rt. #27B
217+90 ℄ #27C
218+23 Rt. #27D
218+20 ℄ #27E
218+20 Rt. #27F
218+43 Rt. #27G
218+50 Rt. #27H
218+74 Rt. #27J
220+00 Lt. #28
221+00 Rt. #28A
219+25 Lt. #30
B.M. #35
U.S. ELEV.
618.18
END MAINT. AGREE. AREA NO. 6
U.S. RT. 4 96+21 77' RT.
BEGIN MAINT. AGREE. AREA NO. 6 (T.H. 121)
U.S. RT. 4 94+80 12' RT. (166')
MATCH
Tool Shed
Gar.
House
Drive
Septic Tank
Conc. Pump Hse. Underground
T.R. P.I. 6+00
Δ 29°30' Rt.
T.R. P.I. 8+60
Δ 104°59' Rt.
T.R. P.I. 9+40
Δ 69°59'20" Rt.
U.S. 4 95+00
END U.S. 4 Construction
U.S. 4 Reloc. P.C.C. 95+00.72
Split Rail Fence
REMSEN
CHILDS
Shrubs
Red Maple
470'
450'
213+30
260'
1002'
LINE
30A
30" M.
U.S. 4 Reloc. P.O.S.T. 93+87.85
93+50
90'
92+41
End Bridge
Resume Roadway
Rev. Med. P.O.T. 216+28.52
Rev. Med. P.O.T. 213+61.70
E.B. 212+50
New 18"x84" R.C.P. Class III
W.B. 212+50
New 18"x68" R.C.P. Class III
29A
T.R. P.I. 133+40
Δ 44°37'20" Rt.
P.I. 96+00
Δ 8°16' Lt.
POST 95+65.65
Approximate Aerial Utility Relocation Route by GMP & NETTCo
P.I. 95+00
Δ 92°49'30" Lt.
95+25
124'
33B
B.M.
POST 93+87.85
T.L. P.I. 135+50
HODGDON
MANNING
34B
34A
32
219+27
143'
220+35
150'
Rev. E.B. P.I. 224+06.58
Rev. Med. P.I. 223+
955'
35A
Rev. Med. P.O.T. 222+01.18
IR-DECK (15) U.S. 4, BR. #65A
THIS SHEET FOR INFORMATION ONLY
Rev. Med. P.O.T. 225+60.76
Rev. Med. P.O.T. 227+65.58
E.B. 225+75 - 226+90 Lt.
Special Ditch - Item 106-A
212 N45°56'W 213
214
215
219
220
221
222
223
224
225
226
227
N41°02'W
10
11
12
31B
WEIGEL
RENEHAN
O'BRIEN
HODGDON
35A
Rev. Med. P.O.T. 217+50.0
Rev. Med. P.O.T. 216+90
US 4 P.I. 91+23.24
90+20.64
B.M. #34
U.S. ELEV.
663.87
W.B. 212+50 Rt. - Ramp A 11+75 Rt.
New 18"x300' R.C.P. Class III
w/ Type A Grate
Ramp A
Δ 14°06'55" Rt.
D 4°
R 1432.39
T 177.34
L 352.88
E 10.94
P.I. 10+49.55
10+47.75
Bank 1/16 per ft.
MATCH
31A
335
357
215+50
199
P.I. 88+00
Δ 30°
89+30
Stop Roadway
Begin Bridge
B.M. #33
U.S. ELEV.
216+00
240'
241'
W.B. 217+00 Rt.
New 30"x84" R.C.P. Class III
U.S. 4
Δ 65°59'48" Lt.
D 7°45'
R 739.80
T 480.08
L 851.56
E 142.20
P.I. 91+23.24
90+20.64
218+42
221'
172'
U.S. 4
162'
220+17
206'
E.B. Curve
Δ 4°56'15"
D 0°30'
R 11459.16
T 494.08
L 987.50
221+81
191'
W.B. Med. Curve Data
Δ 4°56'15" Rt.
Δ 0°30'
R 11459.16
515'
W.B. 224+00
New 18" ACCGMP
w/ Type B Grate
Rev. E.B. Curve Data
(See Med. Curve Data)
Bank 1/4 per ft.
227+00
185'



PLAN

P.V.I. 90+75
Elev. 687.64
350' V.C.

+ 1.6817 %

- 0.2821 %

ELEVATION

GENERAL NOTES:-

1- Elevation datum is sea level based on nearest U.S. Government vertical control.
2- For additional notes see SCB-D1-65.

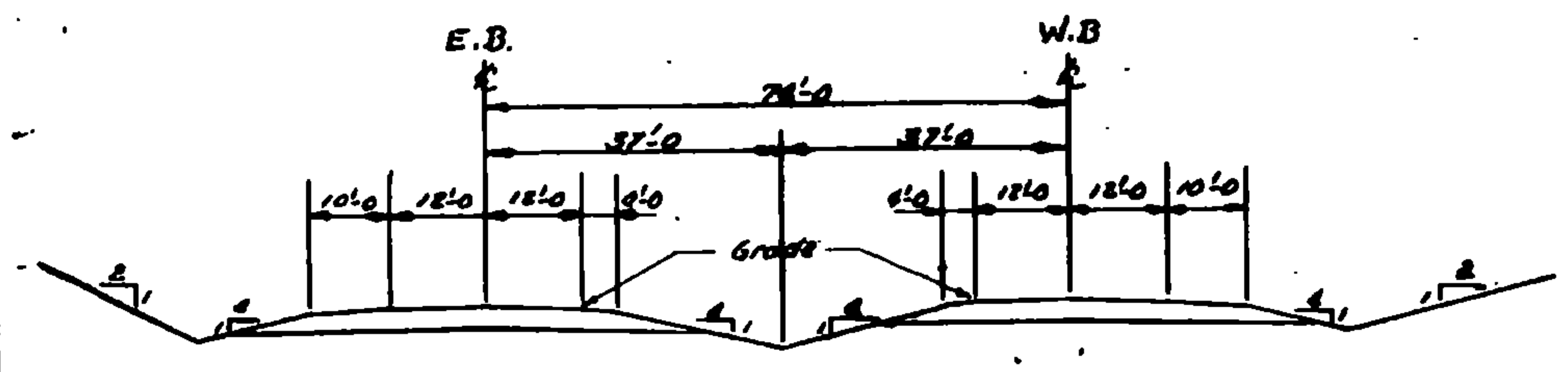
LIST OF SHEETS:-

STANDARD SHEETS

G-3a
SCB-30-65
SCB-D1 thru D9-65
SB-R1-64 Sheets 1 and 2
SB-R3-64

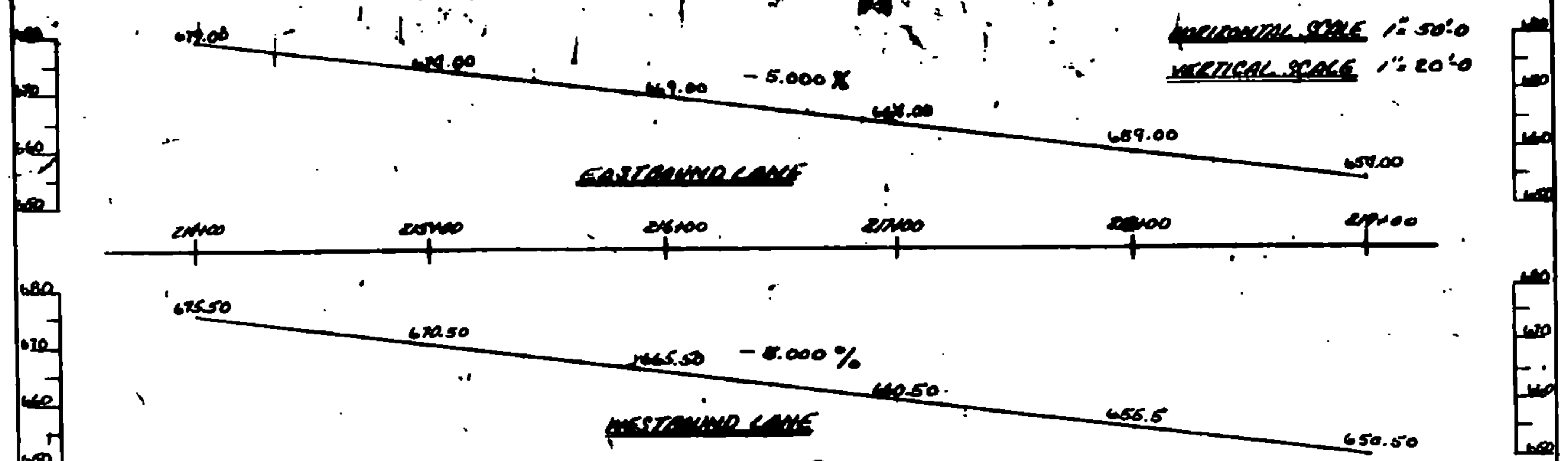
IR-DECK (15) U.S. ...
THIS SHEET FOR INFORMATION ...
BR.200 ...

STATE OF ...
DEPARTMENT OF ...



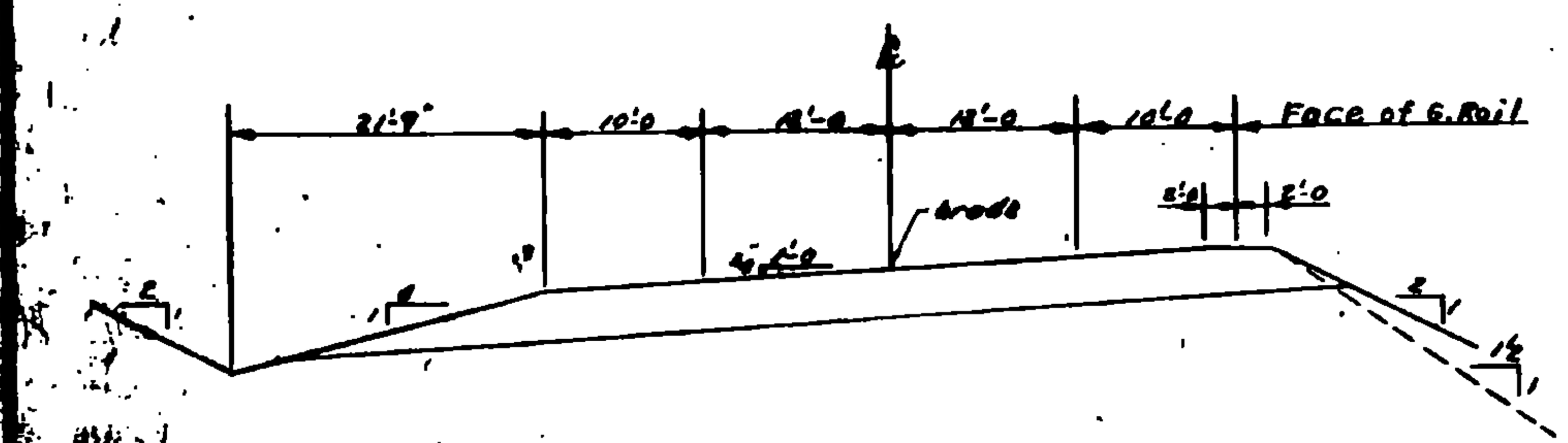
NEW HIGHWAY SECT. STA. TO STA.

SCALE 1" = 20'-0



NEW HIGHWAY PROFILE I-89

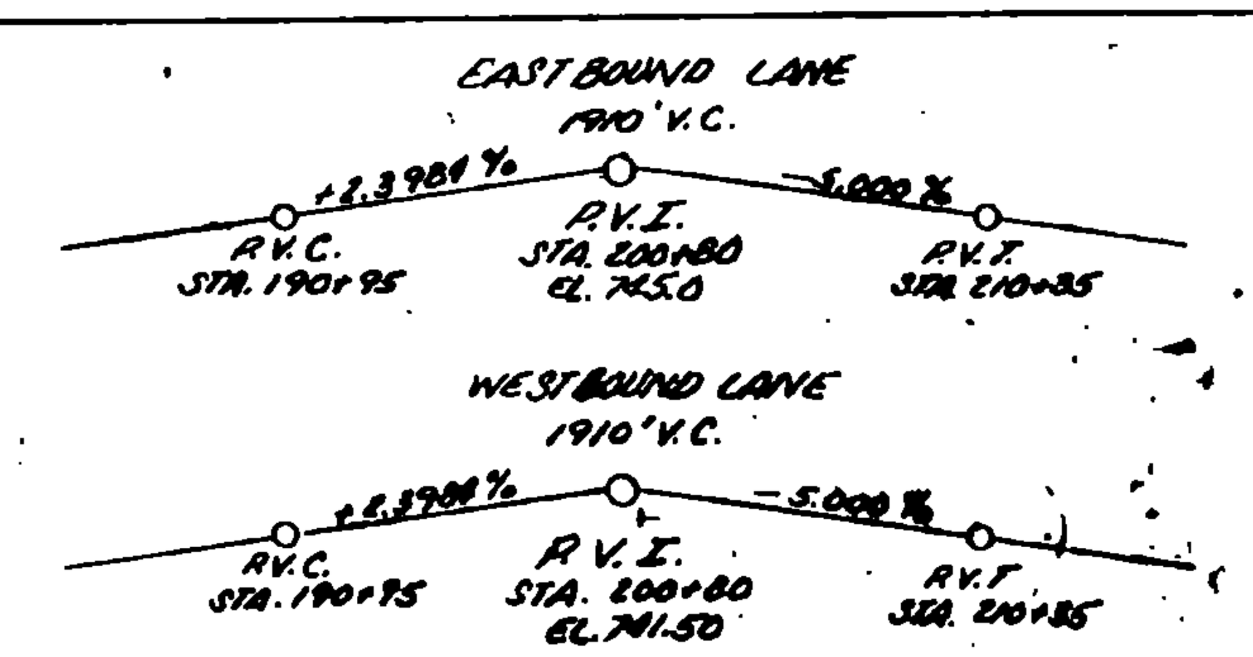
SCALE AS NOTED

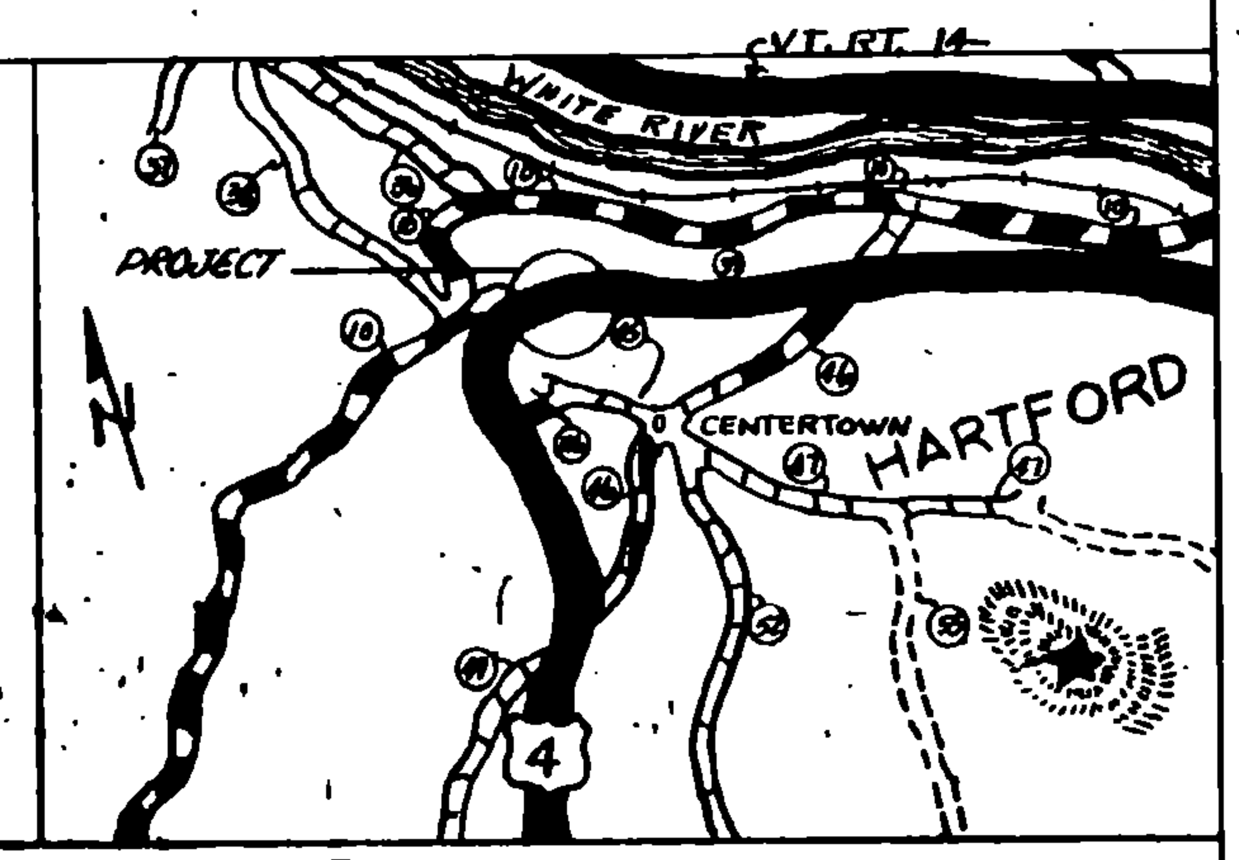


MAXIMUM BANKED SECTION

U.S. ROUTE 4

1" = 10'-0





PROJECT LOCATION

HIGHWAY NO I-89 NAME OF HIGHWAY

STRUCTURE NO COUNTY WINDSOR TOWN HARTFORD

PROJECT NO I-89-1(22) LOCATION INTERSTATE 89 UNDER U.S. ROUTE 4

EXISTING STRUCTURE

1 RATED LOADING OF EXISTING STRUCTURE

2 TYPE OF EXISTING STRUCTURE

3 UNDERCLEARANCE ELEVATION OF EXISTING STRUCTURE

4 WHAT DISPOSITION SHOULD BE MADE OF EXISTING STRUCTURE COST OF REMOVAL

5 SHOULD EXISTING STRUCTURE BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION OF NEW STRUCTURE

6 SHOULD NEW TEMPORARY STRUCTURE BE BUILT

7 ORDINARY HIGH WATER SURFACE ELEV. AT EXISTING STRUCTURE WATERWAY TO ORDINARY H.W.

8 EXTREME HIGH WATER AT EXISTING STRUCTURE

9 SPAN OF EXISTING BRIDGE UPSTREAM WATERWAY TO EXTREME H.W.
SPAN OF EXISTING BRIDGE DOWNSTREAM WATERWAY TO EXTREME H.W.

10 TYPE OF FOUNDATION UNDER EXISTING ABUTMENTS

11 DOES ALL WATER AT FLOOD ELEVATION PASS THROUGH EXISTING STRUCTURE

12 IF NOT AT WHAT ELEVATION IS RELIEF AFFORDED

13 ADDITIONAL WATERWAY AREA PROVIDED

NEW STRUCTURE

1 RECOMMENDED TYPE OF STRUCTURE 4 SPAN SIMPLE COMPOSITE WF BEAM

2 RECOMMENDED CLEAR SPAN OR SPANS 69-99-99-59
MEASURED PARALLEL TO ℄ NEW HIGHWAY 69-99-99-59
MEASURED AT RIGHT ANGLES TO ℄ STREAM N.A.

3 ARE THERE OBJECTIONS TO A PIER IN THE STREAM, ANSWER YES OR NO N.A.

4 ORDINARY HIGH WATER ELEVATION AT NEW STRUCTURE N.A.

5 EXTREME HIGH WATER ELEVATION AT NEW STRUCTURE N.A. SOURCE OF INFORMATION N.A.

6 IS ALL WATER INTENDED TO PASS THROUGH NEW STRUCTURE? N.A.

7 DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? N.A. IS ORDINARY RISE RAPID

8 LOW WATER ELEVATION AT NEW STRUCTURE N.A.

9 DRAINAGE AREA IN ACRES ABOVE STRUCTURE N.A. CHARACTER OF TERRAINE

10 IS STREAM EVER DRY? N.A.

11 VELOCITY OF STREAM AT HIGH WATER STAGE N.A. ESTIMATED DISCHARGE N.A.

12 AREA FULL OPENING N.A. AREA BELOW ORDINARY H.W. N.A.

13 CHARACTER OF SCOUR N.A. DRIFT N.A. ICE N.A.

14 ESTIMATED DRAINAGE AREA ABOVE NATURAL OR ARTIFICIAL STORAGE N.A.

15 VERTICAL CLEARANCE ABOVE FLOOD ELEVATION N.A.

16 ARE SIDEWALKS REQUIRED, IF SO ON WHAT SIDE NO BOTH SIDES N.A.

17 RECOMMENDED TYPE OF PAVEMENT 1½" BITUMINOUS CONCRETE

18 TRAFFIC TO BE MAINTAINED UNDER ITEM NO. 10B ONE OR TWO WAYS TWO PROBABLE COST

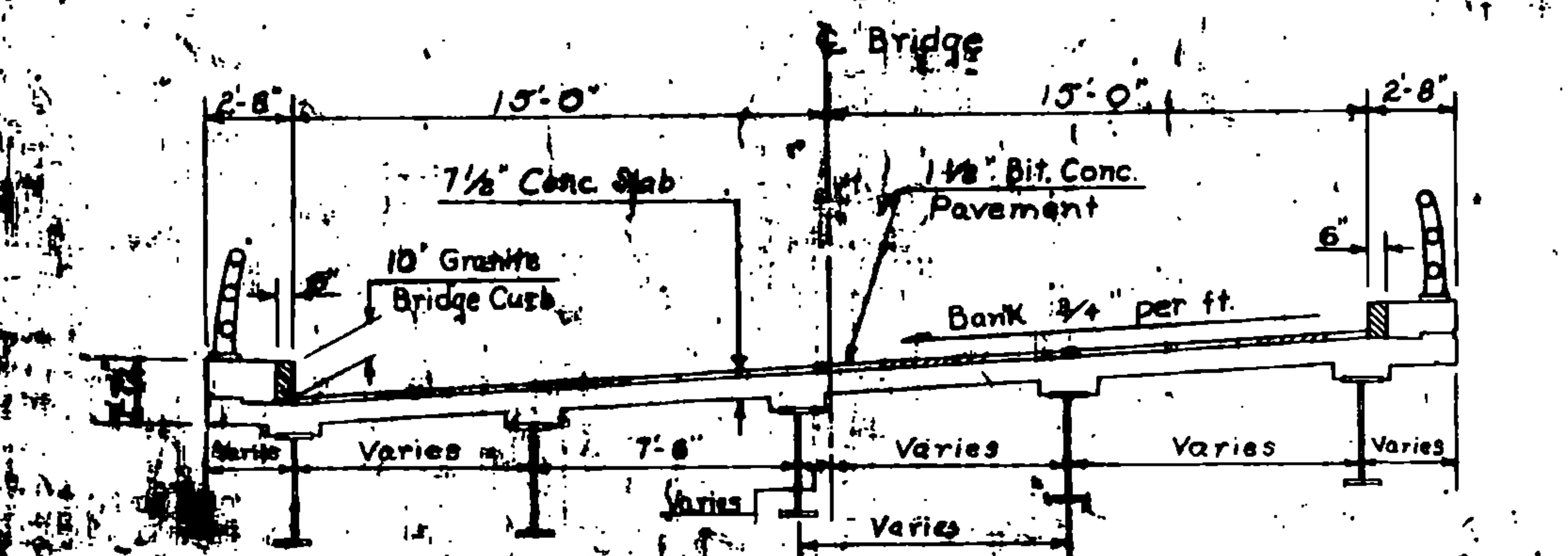
19 PROBABLE COST OF CLEARING AND GRUBBING STREAM CHANNEL AT STRUCTURE SITE N.A.

20 SHOULD PROVISIONS BE MADE FOR PUBLIC UTILITIES? No

21 ESTIMATED ALLOWABLE LOAD ON FOUNDATIONS 2 Tons/ft² 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. BOULDERS MAY BE ENCOUNTERED AT ANY PIER OR ABUTMENT LOCATION.



For additional superstructure details see standard structure SCB-30-65

Typical Section

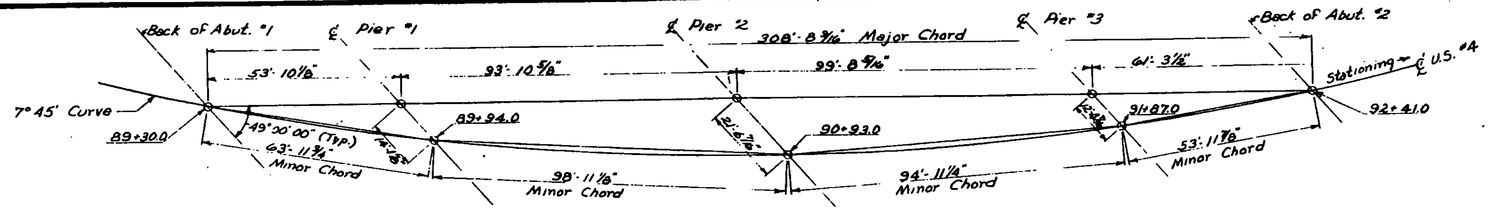
Scale: 1" = 4'-0"

IR-DECK(15) US4 BRG5A
THIS SHEET FOR INFORMATION ONLY

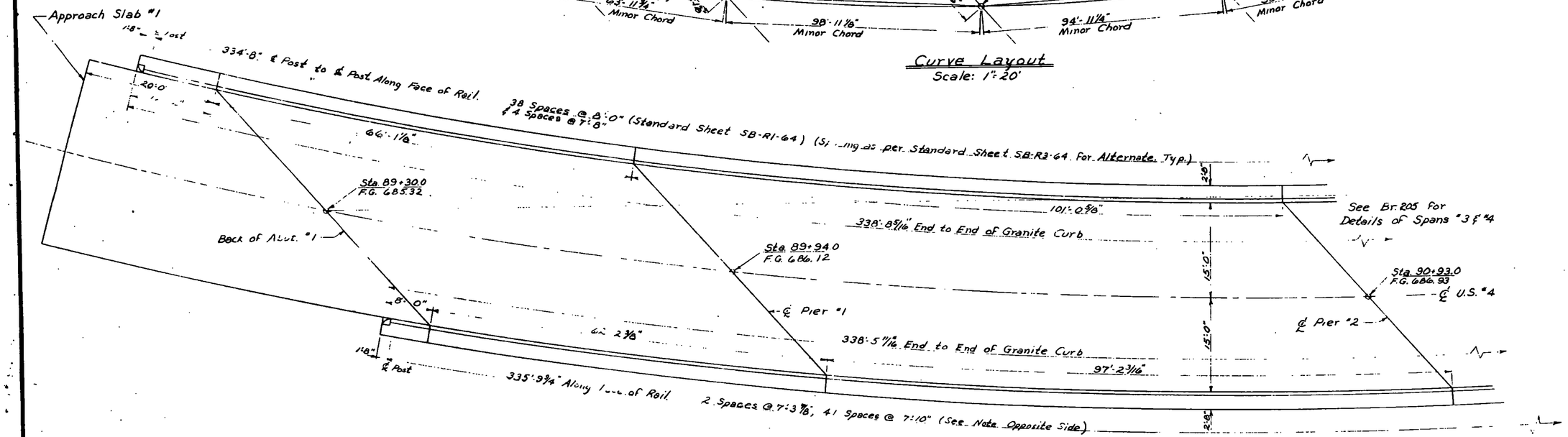
PROFILE OF U.S. ROUTE 4

BR. 202

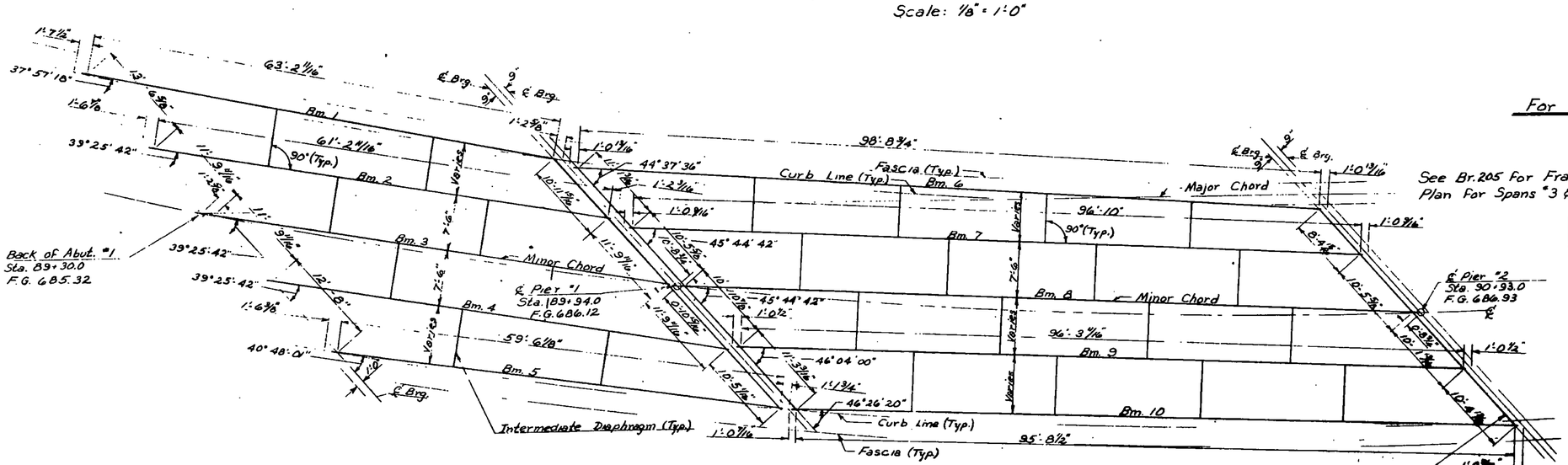
STATE OF VERMONT



Curve Layout
Scale: 1" = 20'



Superstructure Plan - Spans "1 & "2
Scale: 1/8" = 1'-0"



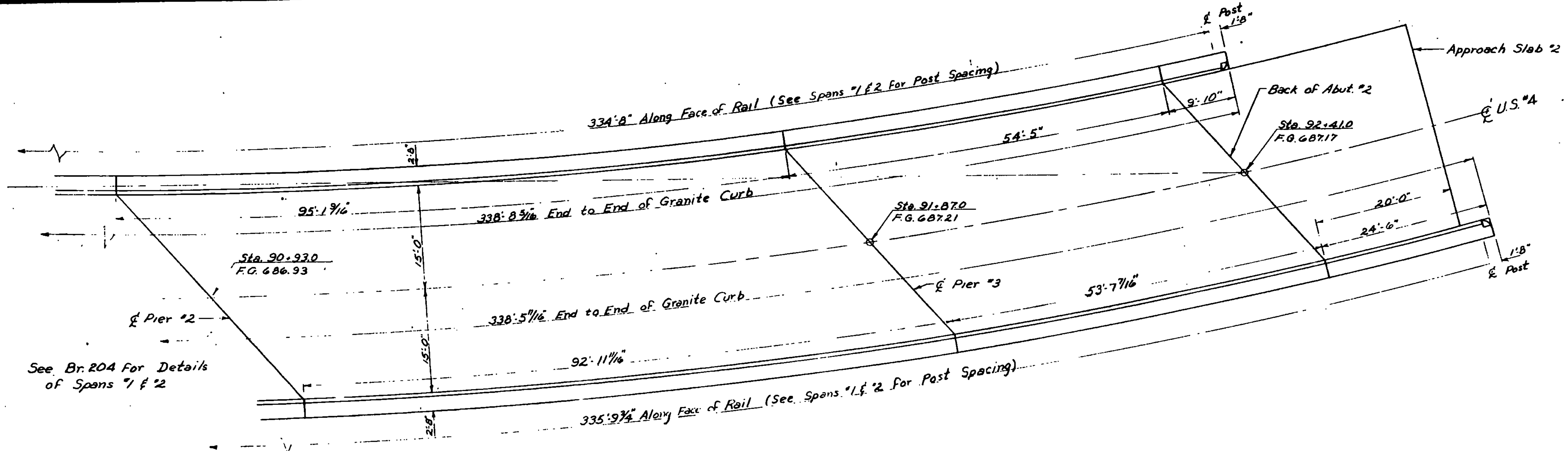
Framing Plan - Spans "1 & "2
Scale: 1/8" = 1'-0"

For Superstructure Notes see Br. 205

IR-DECK (15) U.S. 4, BR. # 65A
THIS SHEET FOR INFORMATION ONLY
Br. 204 of 214

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF Hartford
ROUTE NO. U.S. "4 LOG STA.
U.S. "4 over I 89
Superstructure - Spans "1 & "2
SCALE As noted
SURVEYED BY
DRAWN BY K.A.T. CHECKED BY
PROJECT NO.
SHEET NO.

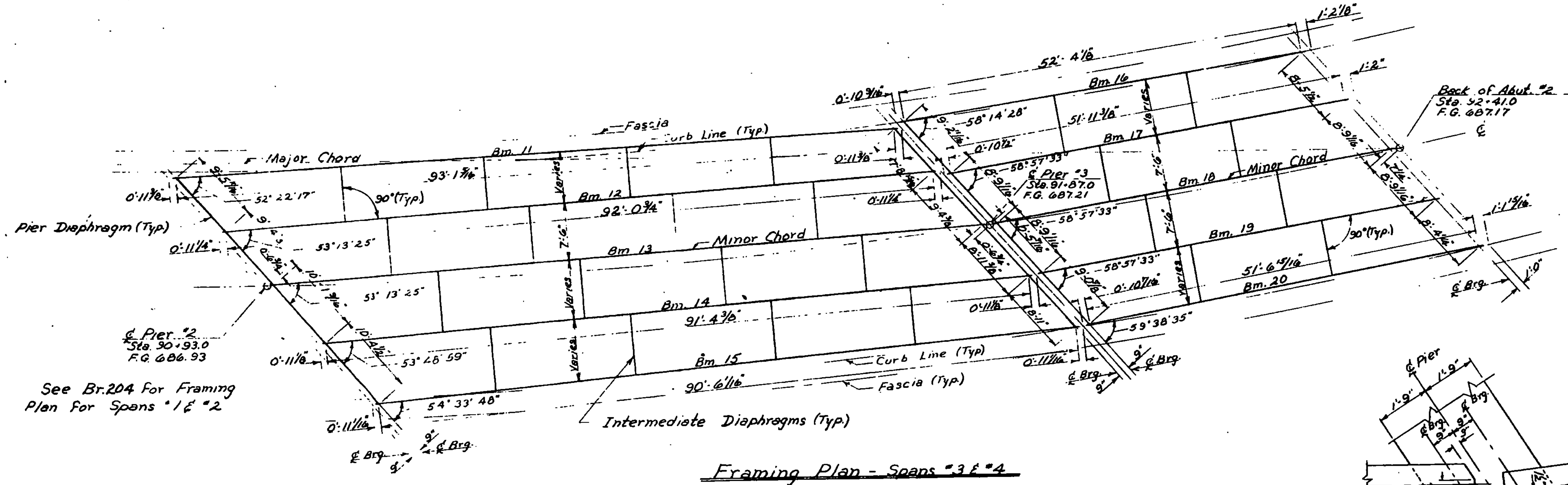


Superstructure Plan - Spans #3 & #4

Scale: 1/8" = 1'-0"

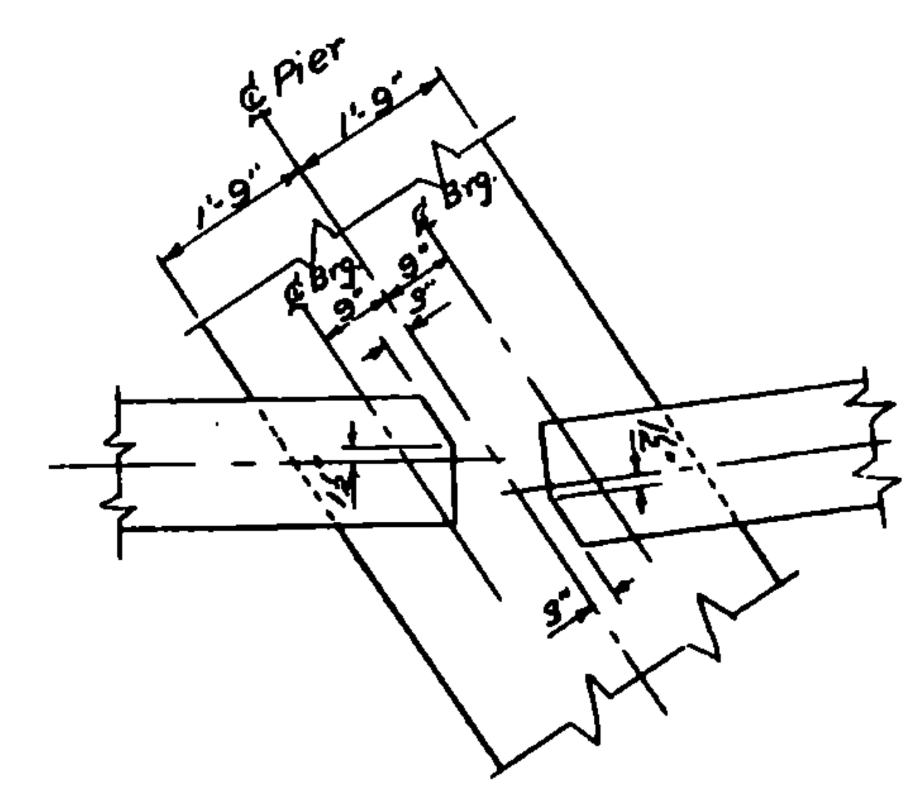
Notes

1. For Beam sizes and Cover Plate sizes and lengths see Standard Sheet SCB-30-65 & SCB-D7-65, Detail "C".
2. For additional details of diaphragms see Standard Sheet SCB-D7-65, Details "A", "D", "E".
3. For Typical Section of Superstructure see Br. 202
4. For additional Superstructure details see Standard Sheets SCB-D1-65 thru SCB-D9-65.
5. No Scuppers are to be used on this bridge.
6. For General Notes see Br. 200



Framing Plan - Spans #3 & #4

Scale: 1/8" = 1'-0"



Details of WF Cut-offs @ Piers

Scale: 1/2" = 1'-0"

(Note: Cut top Flange only)

IR-DECK (15) U.S. 4, BR. # 65A

THIS SHEET FOR INFORMATION ONLY.

Br. 205 of 214

STATE OF VERMONT

DEPARTMENT OF HIGHWAYS

TOWN OF Hartford

ROUTE NO. U.S. #4 LOG STA.

U.S. #4 over I 89

Superstructure, Spans

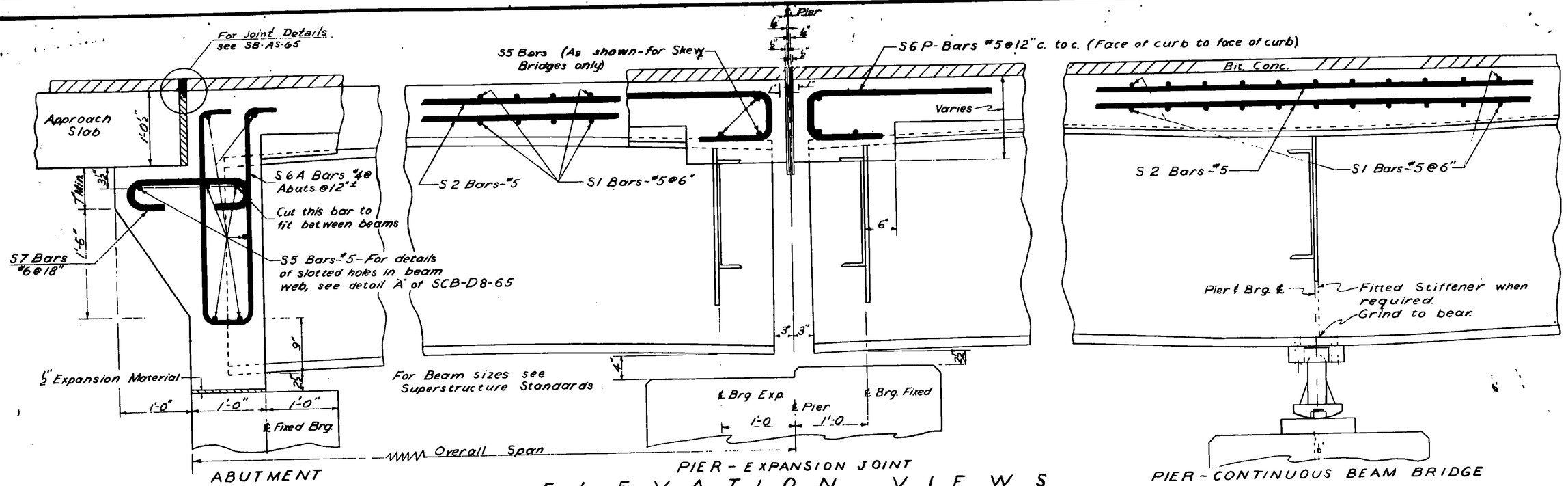
SCALE As noted

SURVEYED BY

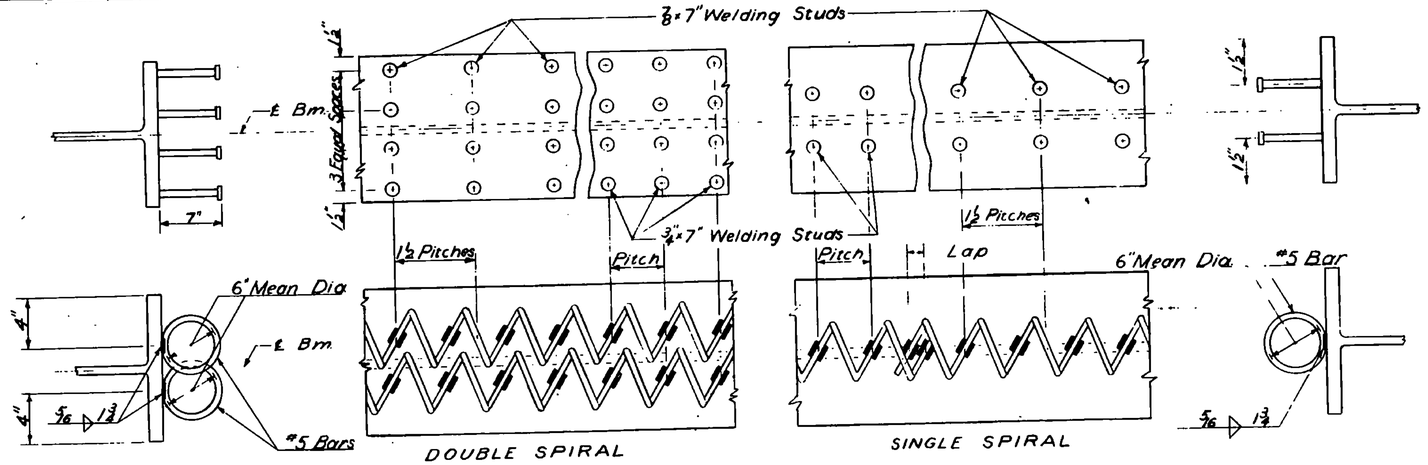
DRAWN BY WBT CHECKED BY

PROJECT NO.

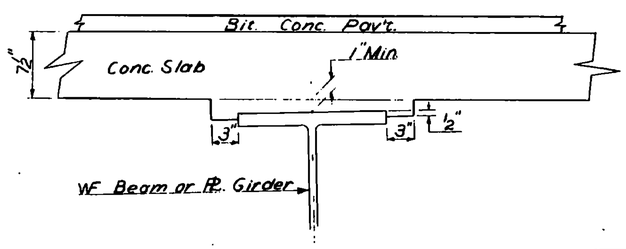
SHEET



ELEVATION VIEWS



SHEAR CONNECTOR DETAILS



BEAM HAUNCH

IR-DECK (15) US 4, BR #65A
THIS SHEET FOR INFORMATION ONLY

REVISIONS & CORRECTIONS

Drawn By: [illegible] 12/1/62 Revised WBT 1/25/65
Traced By: [illegible] 12/1/62 Revised WBT 1/25/65
Checked By: EEP WMS RSH 12/7/62 Rev. WMS 1/24/65

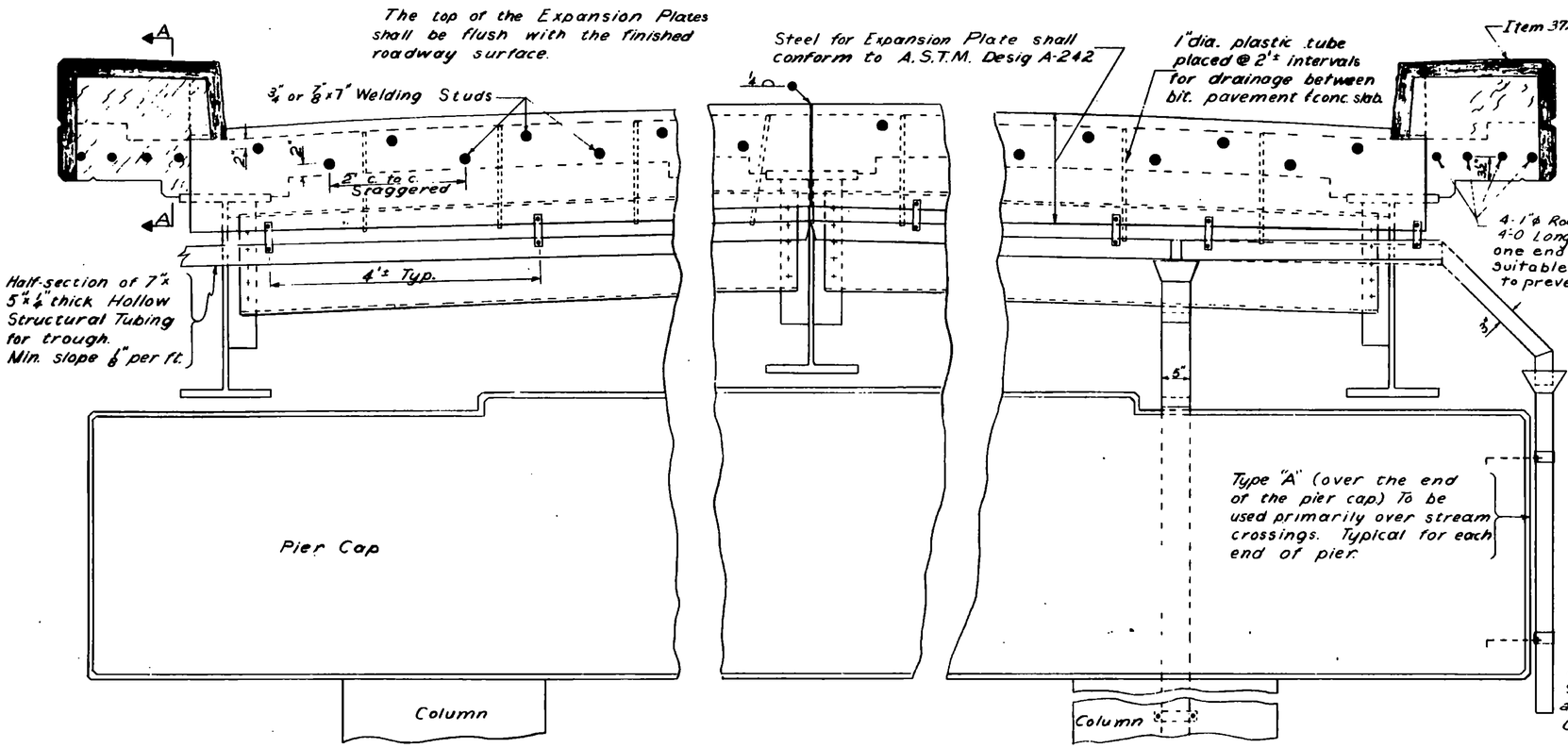
Recommended For Approval: Bridge Engineer — 2/4/65 Date
Recommended For Approval: Assist. Chief Engineer — Date
Approved By: Chief Engineer — 2/4/65 Date

DETAILS OF WF BEAM BRIDGES

Ⓐ ELEVATION VIEWS
Ⓑ SHEAR CONNECTOR DETAILS
Ⓒ BEAM HAUNCH DETAIL

VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

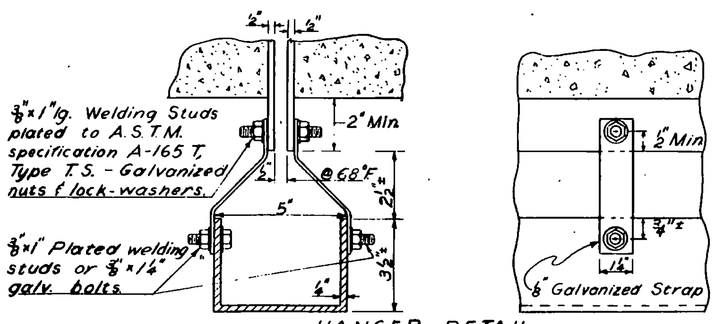
SCB-D2-65



ELEVATION VIEW OF EXPANSION PLATE & DRAIN TROUGH

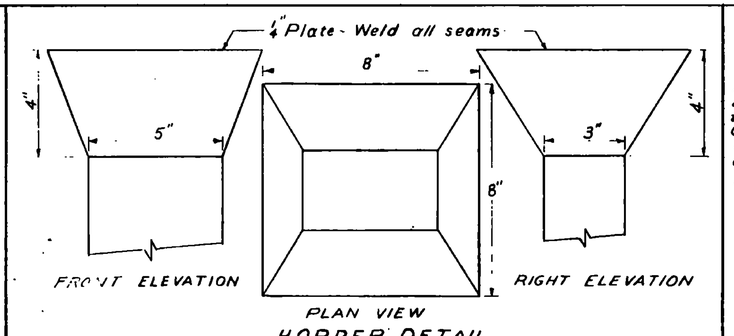
END VIEW

A



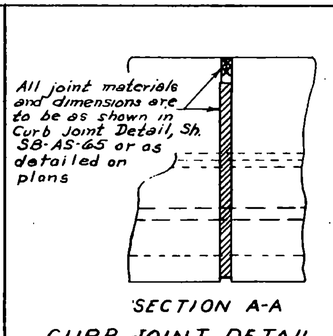
HANGER DETAIL

B



HOPPER DETAIL

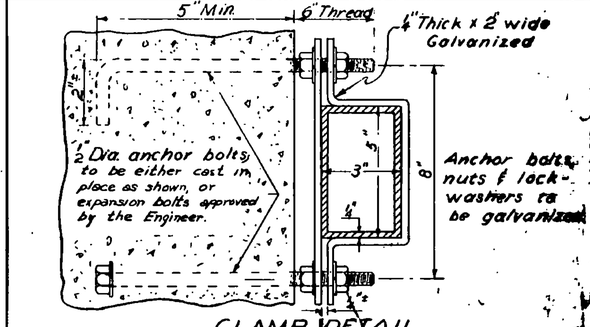
C



SECTION A-A

CURB JOINT DETAIL

D



CLAMP DETAIL

Clamps are to be spaced not greater than 8'-0" c.c.

E

REVISIONS & CORRECTIONS

Drawn By: XX 12/1/62 Revised-WT-1/23/65
Traced By: XX 12/1/62 Revised-WT-1/23/65
Checked By: E.F.P. WMS. RSH 12/1/62 Rev. WMS 1/23/65

Recommended _____ 2/4/65
For Approval Bridge Engineer Date

Recommended _____ 2/4/65
For Approval Assist. Chief Engineer Date

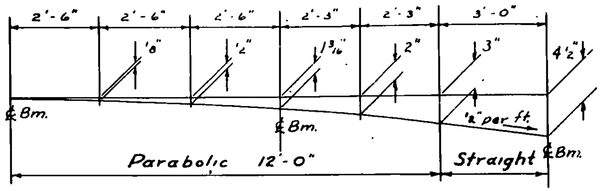
Approved By _____ 2/4/65
Chief Engineer Date

DETAIL OF WF BEAM BRIDGES
PIER EXPANSION PLATES & DRAIN TROUGH DETAILS

IR-DECK(15) U.S 4, BR. #65A
THIS SHEET FOR INFORMATION ONLY

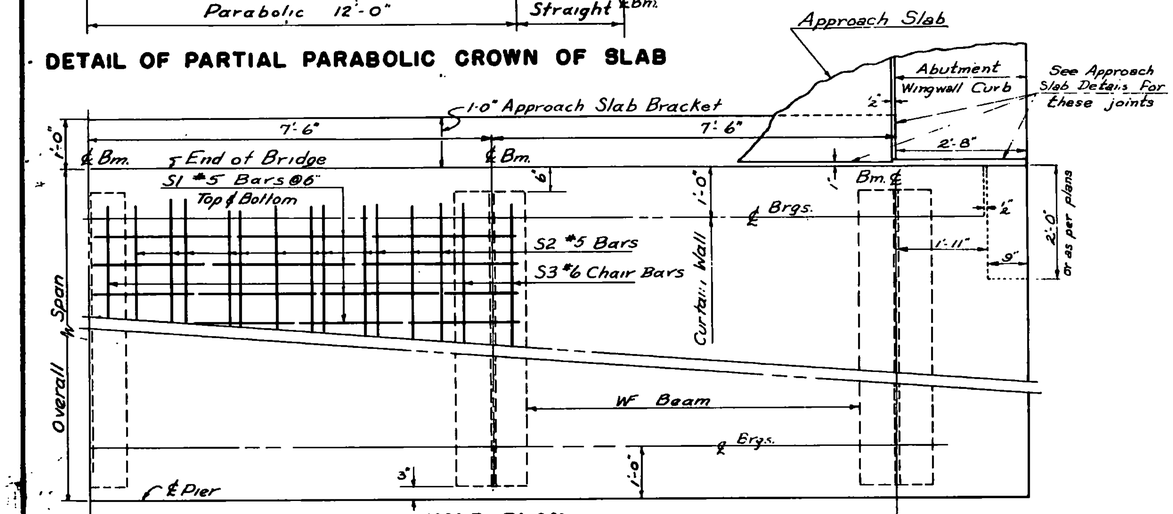
VERMONT
DEPARTMENT OF HIGHWAYS
STRUCTURE STANDARDS

SCB-D3-65

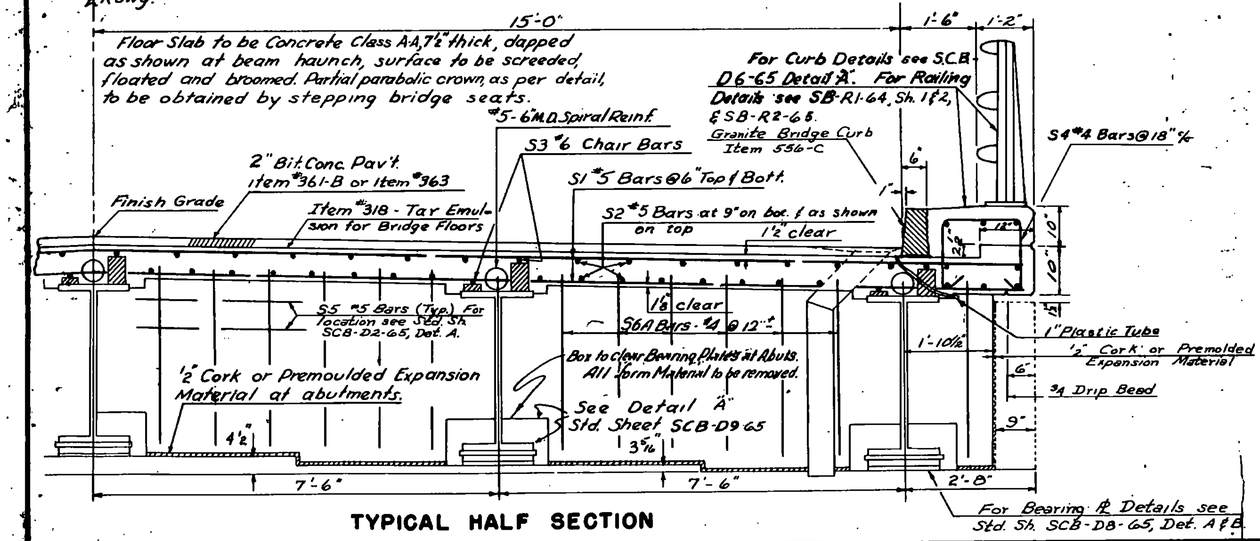


DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB

*Excluding Scuppers & Bearing Devices



HALF PLAN



TYPICAL HALF SECTION

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN (INCLUDES TWO CURTAIN WALLS)

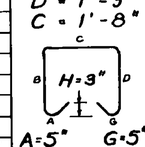
Span, Out to Out	99-0	94-0	89-0	84-0	79-0	74-0	69-0	64-0	59-0	54-0	49-0	44-0	39-0	34-0
Span ℄ to ℄ Brngs.	97-0	92-0	87-0	82-0	77-0	72-0	67-0	62-0	57-0	52-0	47-0	42-0	37-0	32-0
Length of Bms.	98-0	93-0	88-0	83-0	78-0	73-0	68-0	63'-0	58-0	53-0	48-0	43-0	38-0	33-0
Size WF Beam	36WF280	36WF245	36WF230	36WF230	36WF194	36WF170	36WF150	36WF135	36WF135	36WF135	36WF135	36WF135	33WF118	30WF108
Lgth & Size Cover Pl (Bott. only)	66'-1" lg. 14" x 1 1/4"	63'-7" lg. 14" x 1 1/4"	59'-3" lg. 14" x 1 1/4"	49'-3" lg. 14" x 7/8"	49'-2" lg. 10" x 1 1/4"	49'-1" lg. 10" x 1 1/8"	45'-9" lg. 10" x 1"	42'-8" lg. 10" x 7/8"	37'-11" lg. 10" x 5/8"	27'-7" lg. 8" x 5/8"	———	———	———	———
Camber	4 5/8"	4 1/4"	3 7/8"	3 1/2"	3 1/8"	2 3/4"	2 5/8"	2"	1 5/8"	1 3/8"	1 1/8"	1"	1"	3/4"
Dead Load Deflection	3 1/2"	3 1/8"	2 5/8"	2 1/4"	1 7/8"	1 5/8"	1 3/8"	1 1/8"	7/8"	5/8"	1/2"	3/8"	1/4"	1/4"
Dia. of Spiral Bars	→	→	→	→	→	→	5/8"	→	→	→	→	Non Composite		
Mean Dia. of Spiral	→	→	→	→	→	→	6"	→	→	→	→	"	"	
Spiral Pitch 0'-10' from Brng.	Double @ 5 1/2	Double @ 5 1/2	Double @ 5 1/2	Double @ 5 1/2	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5 1/2	Double @ 6 1/2	"	"	
" " 10'-20' or ℄ Span	Double @ 6 1/2	Double @ 6"	Double @ 6 1/2	Double @ 7"	Double @ 7"	Double @ 7 1/2	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7"	Double @ 7 1/2	"	"	
" " 20'-30' or ℄ Span	4"	4"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	5"	5 1/2"	6"	6"	"	"	
" " 30'-40' or ℄ Span	5"	5"	5"	6"	6"	6"	6"	5"	———	———	———	"	"	
" " 40'-℄ Span	6 1/2"	6 1/2"	6"	6"	———	———	———	———	———	———	———	"	"	
*Tot. Struct. Steel (1 span) (lbs.)	169,590	145,670	126,840	112,050	92,150	76,670	62,740	52,610	45,490	41,150	35,830	32,380	24,240	19,280
Reinforcing Bars - S1	396	376	356	336	316	296	276	256	236	216	196	176	156	136
" " - S2	225	225	225	225	225	225	225	150	150	150	150	150	150	75
" " - S3	30	30	30	30	30	30	30	20	20	20	20	20	20	10
" " - S4	134	128	120	114	108	100	94	88	80	74	68	60	54	48
" " - S5	16	16	16	16	16	16	16	16	16	16	16	16	16	16
" " - S6A	52	52	52	52	52	52	52	52	52	52	52	52	52	52
" " - S7	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Tot. Weight - Reinf. Bars (lbs.)	25,490	24,260	23,070	21,830	20,610	19,420	18,180	16,740	15,520	14,310	13,090	11,870	10,640	9,320
Approx. Wt Spiral Reinf. (lbs.)	2,580	2,550	2,380	2,190	2,160	2,040	1,990	1,860	1700	1560	1440	Non Composite		
Tot Cu Yds. Conc. Class "AA". (Cu yds)	114	109	104	99	93	88	82	77	72	67	61	56	51	46
Tot. Wt Bitum. Conc. Pav't (Tons)	41	39	37	35	32	31	28	27	24	23	20	19	16	15
Tar Emulsion for Bridge Floors (Gals.)	132	125	119	112	105	99	92	85	79	72	65	59	52	46
Approx. Quantity 3/4" x 7" Studs	3180	3,120	2,940	2,680	2,640	2,500	2,440	2280	2,120	1900	1,760	Non Composite		
Approx. Quantity 7/8" x 7" Stud's	2,110	2,080	1,960	1,790	1,760	1670	1630	1520	1410	1270	1170	Non Composite		
Item 440 - Water Repellent (Gals.)	2 3/4	2 3/4	2 1/2	2 1/2	2 1/4	2 1/4	2	2	1 3/4	1 1/2	1 1/2	1 1/4	1 1/4	1

REINFORCING STEEL SCHEDULE

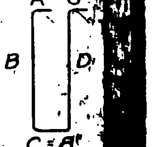
Span	S2-#5 Str. Length	S3-#6 Str. Length	S6A-#4 B & D	S6A-#4 Total Length
34	33'-6"	33'-6"	2'-6"	6'-6"
39	20'-3"	20'-6"	2'-9"	7'-0"
44	22'-9"	23'-0"	3'-0"	7'-6"
49	25'-3"	25'-6"	3'-0"	7'-6"
54	27'-9"	28'-0"	3'-0"	7'-6"
59	30'-3"	30'-6"	3'-0"	7'-6"
64	32'-9"	33'-0"	3'-0"	7'-6"
69	24'-3"	24'-6"	3'-2"	7'-10"
74	26'-0"	26'-3"	3'-2"	7'-10"
79	27'-6"	28'-0"	3'-3"	8'-0"
84	29'-3"	29'-6"	3'-3"	8'-0"
89	31'-0"	31'-3"	3'-3"	8'-0"
94	32'-6"	33'-0"	3'-4"	8'-2"
99	34'-3"	34'-6"	3'-4"	8'-2"

S1-#5 34'-10" Straight | S5-#5 33'-4" Straight

S4-#4: T.L. = 5'-4", B = 1'-5", D = 1'-5", C = 1'-8"



S6A-#4: T.L. Varies, A=5", G=5"



S7-#6: T.L. = 3'-0", B = 1'-8", J=6", A=8", G=8"

S6P-#5: T.L. = 4'-2", B-E-6", Q=

IR-DECK (15) US 4, BR #65A
THIS SHEET FOR INFORMATION ONLY

Revisions & Corrections
1) Changed Bit. Conc. Thickness from 1 1/2 to 2" revised Tot. Wt of Bit. Conc. Pav't. W 1/21/66
2) Changed SB-R3-64 to SB-R2-65 W 1-21-66
3) Revised Item 440 W 2-24-66

Drawn By: R.S.H. June 1960, Rev WBT, 1/65
Traced By: R.S.H. June 1960, Rev WBT, 1/65
Checked By: R.T.B. & R.S.H. July 1960 Rev WMS 1/65

Recommended For Approval: Bridge Engineer Date 6/4/65
Recommended For Approval: Asst. Chief Engineer Date 2/4/65
Approved By: Chief Engineer Date

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
30 FOOT ROADWAY WF BEAM BRIDGES
DESIGN LOADING - HS 20-44 - (A.S.T.M.-A 36-62T. STEEL)
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARDS SCB-D1 THROUGH D8-65

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-30-65

37

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	55	
361-B	BITUMINOUS CONCRETE PAVEMENT	TONS	13	
372-A	JOINT SEALER – HOT POURED	L.F.	70	
372-C	JOINT SEALER – PREFORMED, TYPE A	L.F.	40	
372-C	JOINT SEALER – PREFORMED, TYPE B	L.F.	20	
501-B	CONCRETE CLASS B	CY.	48	
402	REINFORCING STEEL	LB.	7750	
	BRIDGE QUANTITY SHEET NO. 201 OF	[illegible]	[illegible]	

REVISIONS AND CORRECTIONS

DRAWN BY: W.B.T. Jan. 1965
TRACED BY: W.B.T. Jan. 1965
CHECKED BY: WMS Feb. 1965

RECOMMENDED FOR APPROVAL: [signature] BRIDGE ENGINEER 2/4/65 DATE
RECOMMENDED FOR APPROVAL: R.H. Arnold ASSISTANT CHIEF ENGINEER 2/4/65 DATE
APPROVED BY: A.D. Burke CHIEF ENGINEER 2/4/65 DATE

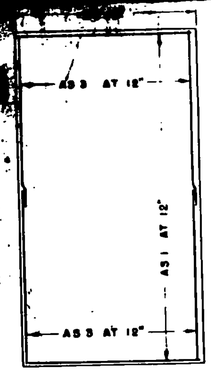
DETAILS OF APPROACH SLAB FOR 30 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 91+03

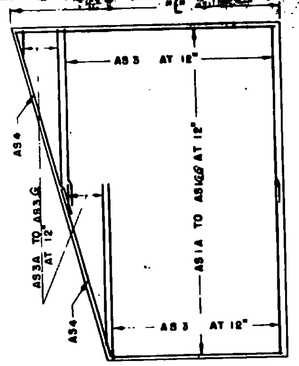
LOCATION US #4 over I 89

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURE

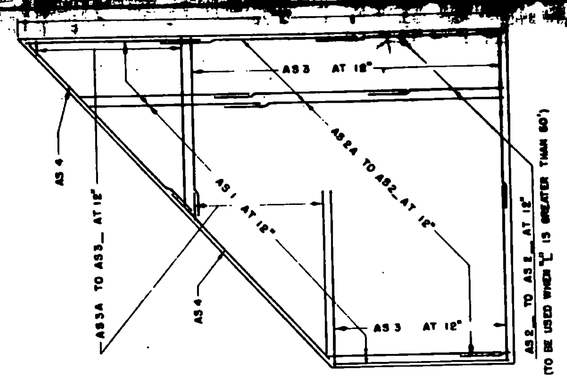
TOWN OF
ROUTE NO.



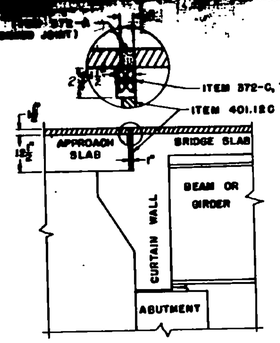
DETAIL "A" - SQUARE



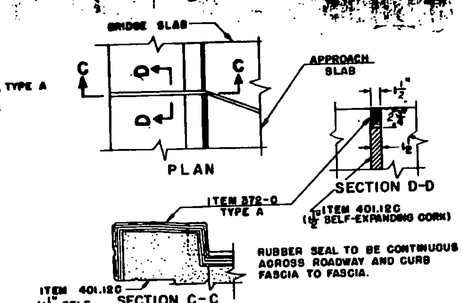
DETAIL "B" - "L" LESS THAN 35'



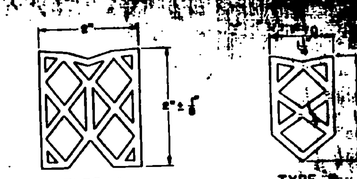
DETAIL "C" - "L" GREATER THAN 35'



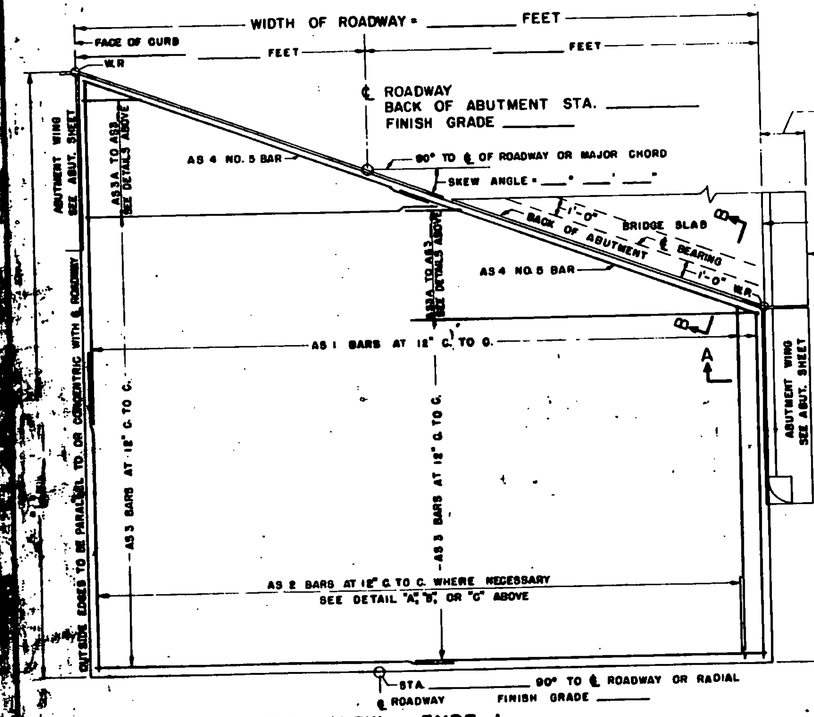
SECTION B-B



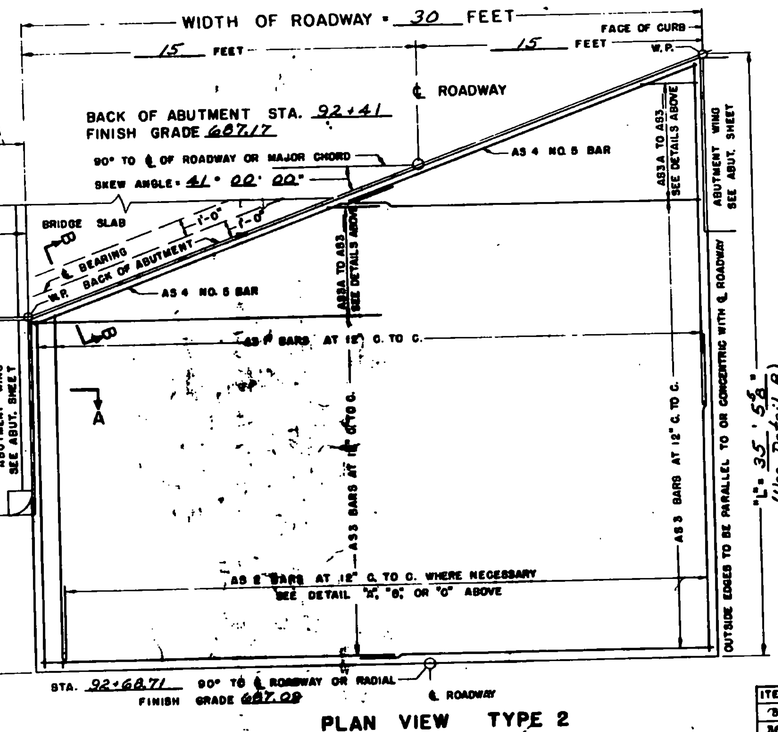
CURB JOINT DETAIL



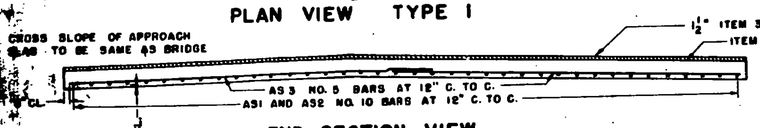
DETAILS - ITEM 372-C JOINT SEALER - PREFORMED
MATERIAL TO BE PREMOLDED NEOPRENE RUBBER



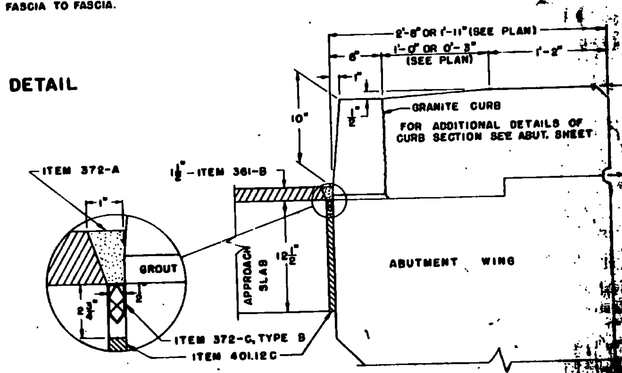
PLAN VIEW TYPE 1



PLAN VIEW TYPE 2



END SECTION VIEW



SECTION A-A

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE STATE OF VERMONT, DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATED APRIL 1960, AND A.A.S.H.O. SPECIFICATIONS DATED 1961. DESIGNED FOR H S 20-44 LOADING.
2. ALL REINFORCING STEEL SHALL BE DETAILED ON THE REINFORCING STEEL SCHEDULE. ALL SHALL BE A MINIMUM OF 40 BAR DIAMETERS.

IR-DECK (15), U.S. 4, BR. #65A
THIS SHEET FOR INFORMATION ONLY

REINFORCING BE...
DETAIL SHOWN ...
ALL OTHER BARS ...
REINFORCING

BAR NO.	A	NO.	LENGTH
AS 1			
AS 2			
AS 4			

SUMMARY OF QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL	FINAL
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	37	
361-8	BITUMINOUS CONCRETE PAVEMENT	TONS	9	
372-A	JOINT SEALER - HOT POURED	L.F.	65	
372-C	JOINT SEALER - PREFORMED, TYPE A	L.F.	45	
372-C	JOINT SEALER - PREFORMED, TYPE B	L.F.	90	
401-8	CONCRETE - CLASS A	C.Y.	64	
409	REINFORCING STEEL	LBS.	6989	
SEE				

REVISIONS AND CORRECTIONS

DRAWN BY: W.A.T. Jan. 1965
TRACED BY: W.A.T. Jan 1965
CHECKED BY: W.M.S. Feb. 1965

RECOMMENDED FOR APPROVAL: _____ BRIDGE ENGINEER DATE 2/5/65
RECOMMENDED FOR APPROVAL: R.H. Arnold ASSISTANT CHIEF ENGINEER DATE 2/4/65
APPROVED BY: C.D. Baker DATE 2/5/65

DETAILS OF APPROACH SLAB FOR 30 (WIDTH) FOOT BRIDGE

TO BE USED FOR BRIDGE AT STATION 91+0.4

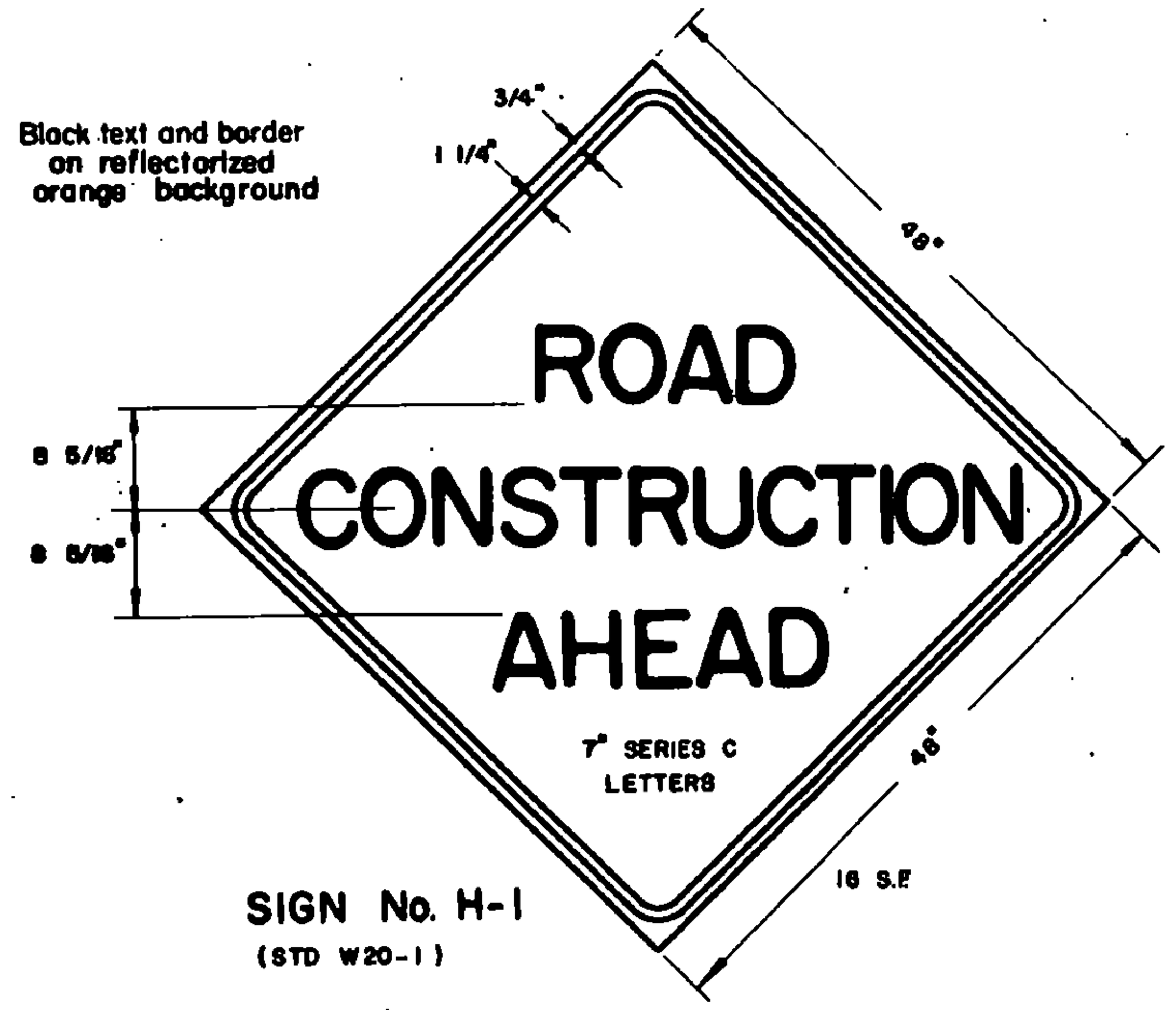
LOCATION U.S. 4 over

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS
STANDARD

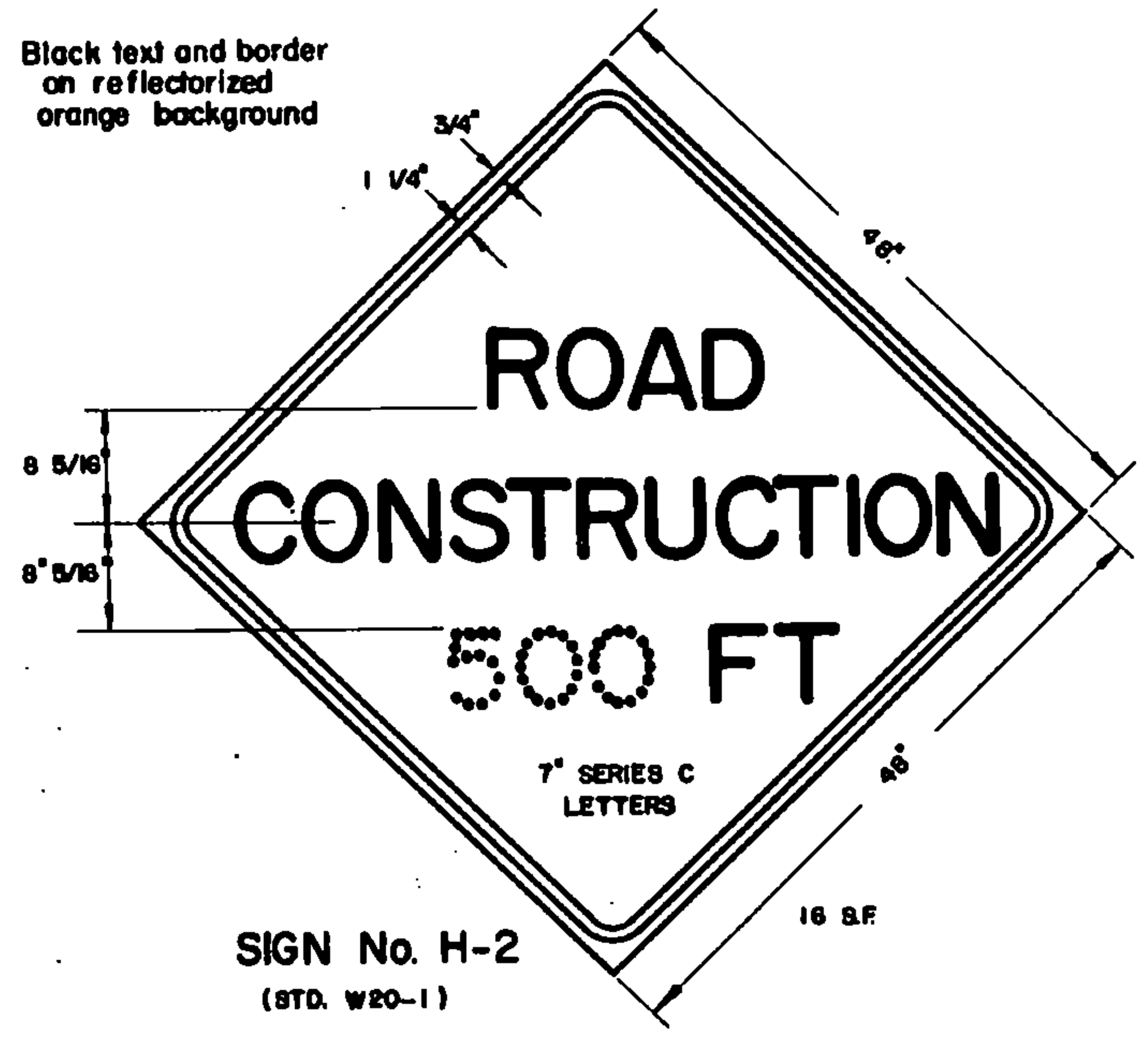
TOWN OF _____
ROUTE NO. _____

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"

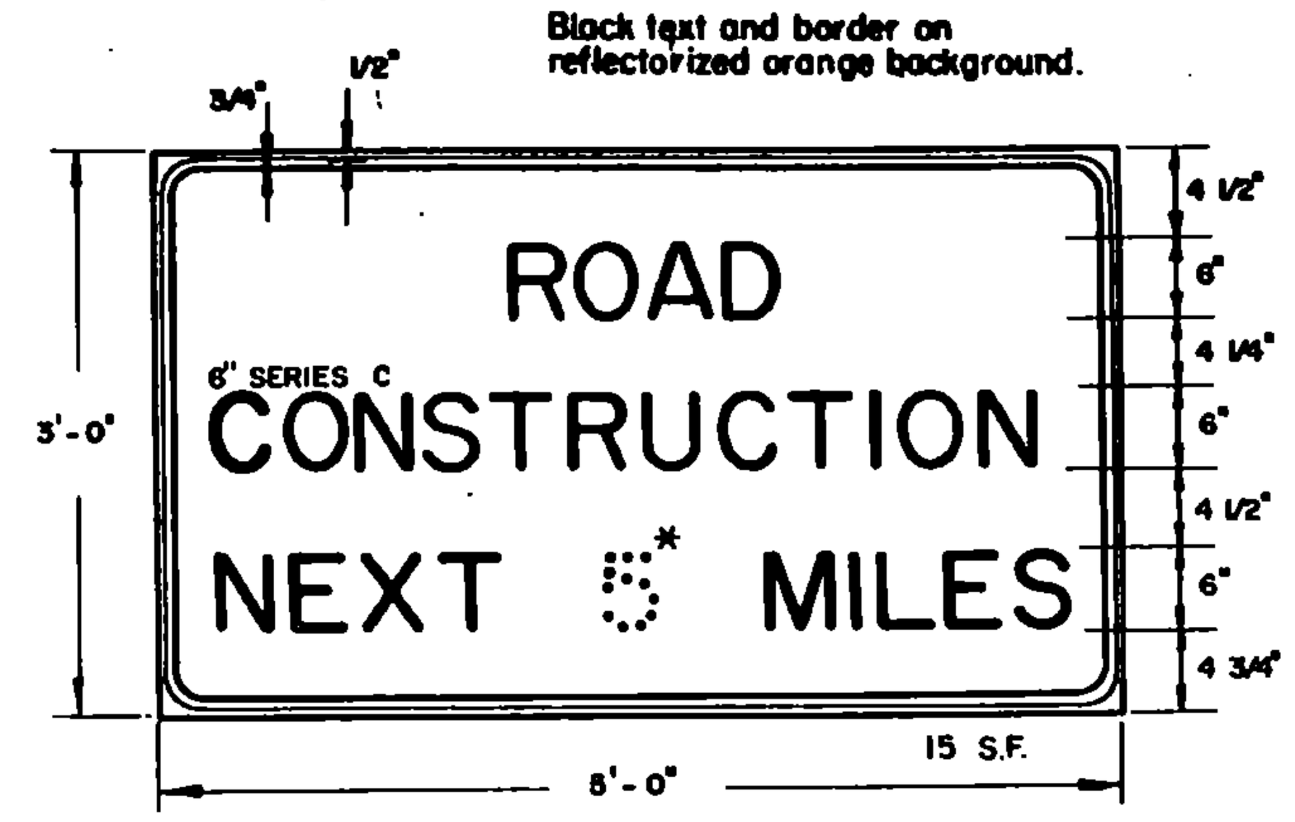
* Show mileage to nearest 1/4 mile



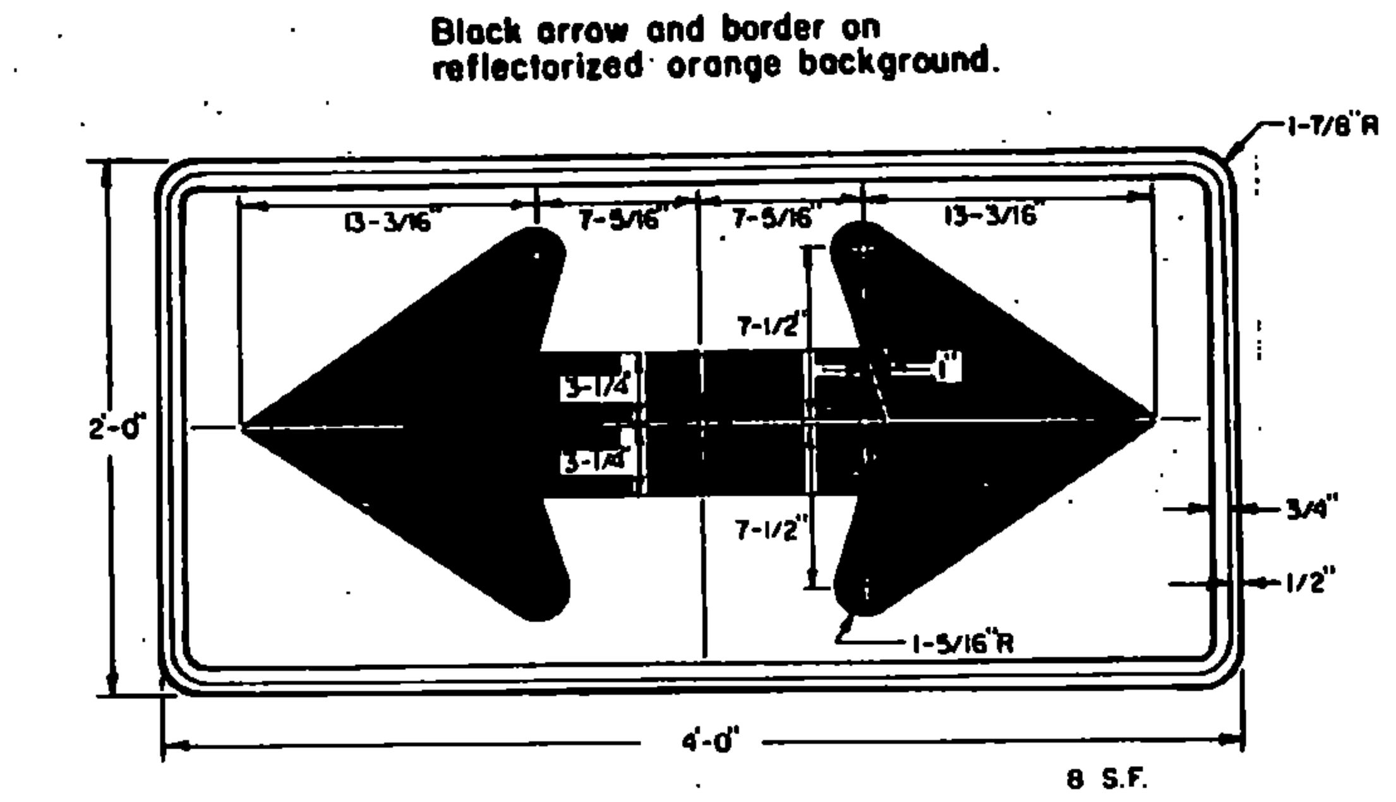
SIGN No. H-1 (STD W20-1)



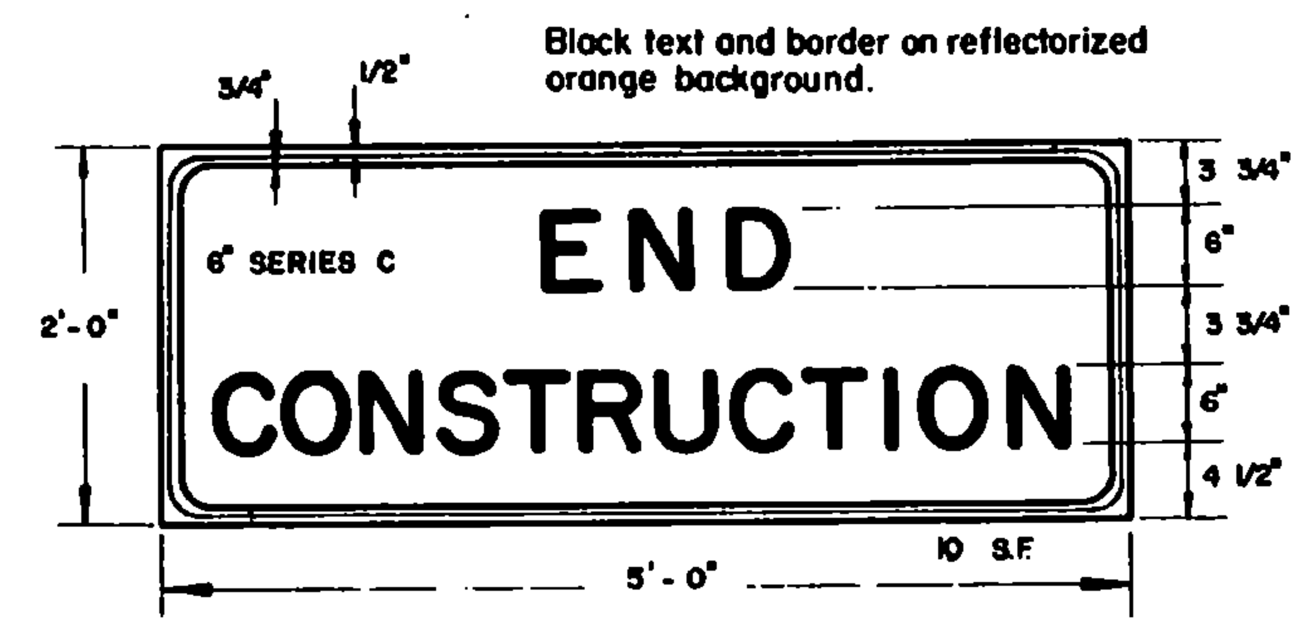
SIGN No. H-2 (STD. W20-1)



SIGN No. H-3 (STD. G20-1)



SIGN No. H-4 (STD. W1-7)



SIGN No. H-5 (STD. G20-2)

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

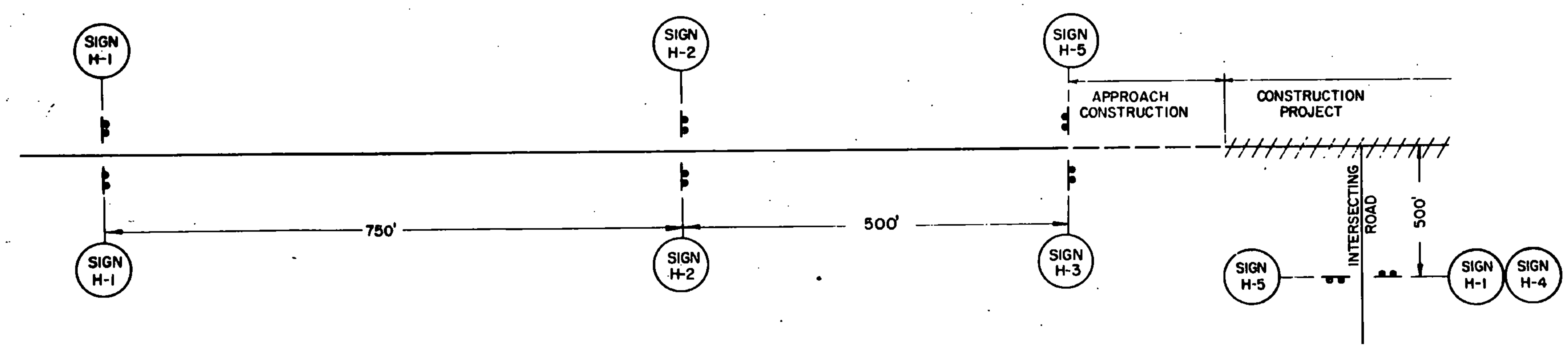
The designs of the signs shall conform with the details shown on this sheet and with the standards prescribed in the Manual on Uniform Traffic Control Devices prepared by National Joint Committee on Uniform Traffic Control Devices.

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, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED
Dec. 14 1971
DATE

R. H. Arnold
CHIEF ENGINEER

E. H. Stickney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

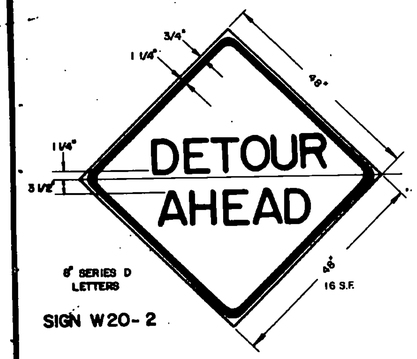
TRAFFIC SIGNS

ROAD CONSTRUCTION APPROACH SIGNS

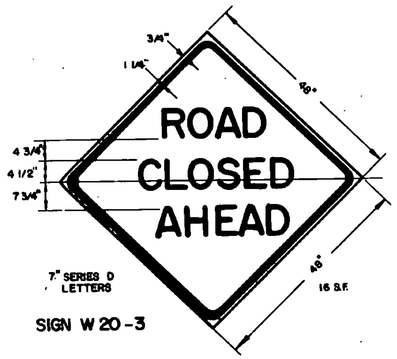
VERMONT AGENCY OF TRANSPORTATION

STANDARD

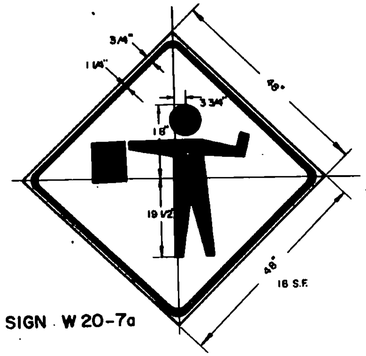
E-2



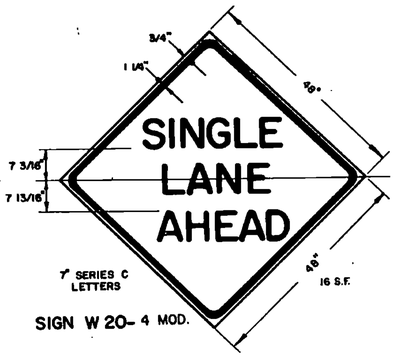
SIGN W20-2



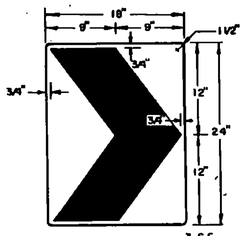
SIGN W20-3



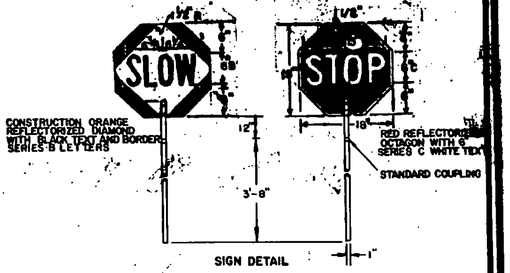
SIGN W20-7a



SIGN W20-4 MOD.

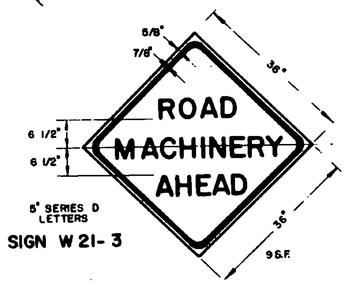


SIGN W1-8

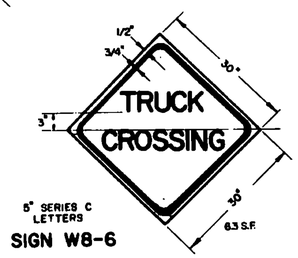


SIGN DETAIL

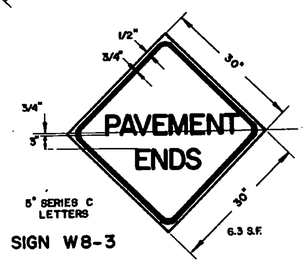
STAFF DETAIL



SIGN W21-3



SIGN W8-6



SIGN W8-3

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.

SIGN PADDLE FOR FLAGPERSON

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 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 RII-2 and the sign paddle shall have black texts and borders on an encapsulated lens reflective orange background. Sign RII-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.

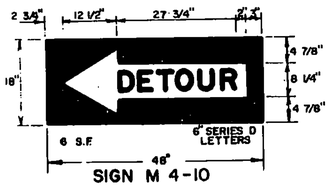
MAINTENANCE

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.

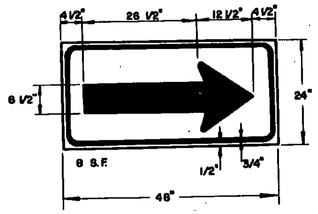
The maintenance of all traffic control devices shall be subject to the orders of the Engineer.

SIGN R II-2



SIGN M 4-10

ARROW LEFT OR RIGHT AS REQUIRED.



SIGN W1-6

ARROW RIGHT OR LEFT AS REQUIRED

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 10, 1976 – 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. 18, 1978 – ILLUMINATION DELETED.
FEB. 27, 1980 – SIGN WI-8 AND SIGN PADDLE ADDED. SIGN DETAILS REVISED.
APR. 1, 1980 – SIGN PADDLE SIGN REVISED.
FEB. 3, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED
Dec. 14, 1971
DATE

R. H. Arnold
CHIEF ENGINEER

E. W. Stickney
ASST. CHIEF ENGINEER

G. M. Lane
HIGHWAY ENGINEER

TRAFFIC SIGNS

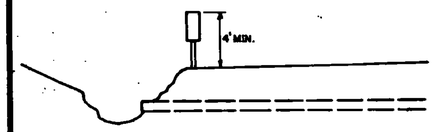
ON-PROJECT CONSTRUCTION SIGNS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

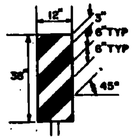
E-6

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



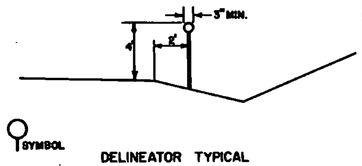
HAZARD MARKER TYPICAL

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 CONDITONS 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 MINIMUM.

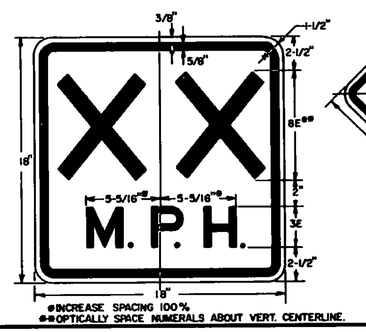


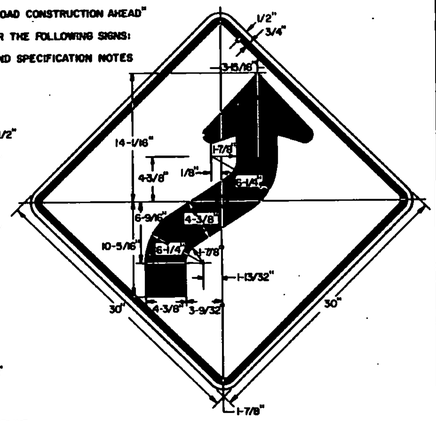
DELINEATOR TYPICAL

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 POST, 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.





BARRICADES

APPLICATION NOTES

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

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

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

MATERIALS

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

1. WOODEN BARRICADES (TYPES I AND II)
   A. SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 MILES PER HOUR ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
   B. MAY BE USED IF OPERATING SPEEDS OF 20 M.P.H. OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED WITHIN THE CLEAR ZONE OF ANY HIGHWAY REGARDLESS OF THE TRAFFIC OPERATING SPEED.

DESIGN

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

COLORS

THE 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.

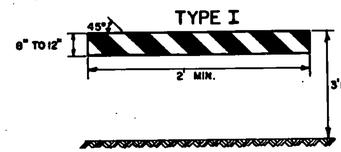
REFLECTORIZATION

THE BARRICADES SHALL BE REFLECTORIZED WITH REFLECTIVE SHEETING.

LOCATION

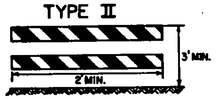
THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, OR AS OTHERWISE NOTED.

TYPE I

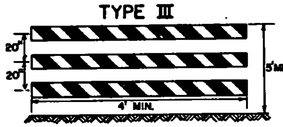


STRIPPING IS SHOWN WITH TRAFFIC PASSING TO THE RIGHT.

TYPE II



TYPE III



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 STAY BRACE
FLEXIBILITY	ESSENTIALLY MOVEABLE	PORTABLE
ANGLE OF STRIPE	45°	45°
COLOR OF STRIPS	ORANGE AND WHITE	ORANGE AND WHITE

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

MAINTENANCE

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

LIGHTING

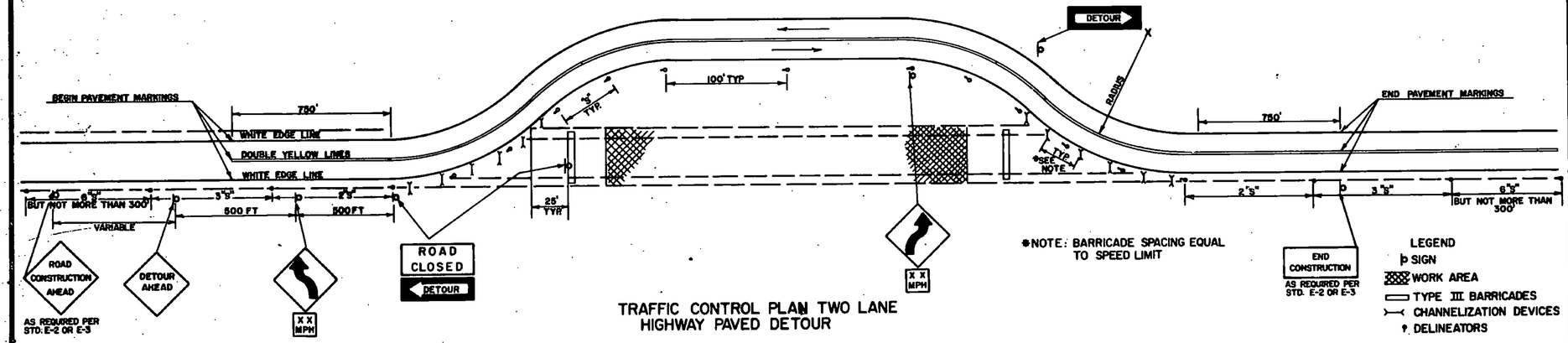
FOR NIGHTTIME USE ADD FLASHING WARNING LIGHTS WHEN BARRICADES ARE USED SINGLY AND STEADY BURN LIGHTS WHEN BARRICADES ARE USED IN A SERIES FOR CHANNELIZATION. THE LIGHTING DEVICES SHALL CONFORM TO THOSE SPECIFIED IN THE MUTCD.

DELINEATOR SPACING

DESIGN SPEED MPH	REQUIRED RADIUS FT	SPACING - "S" FT
25	150	30
30	250	40
40	460	60
50	760	75

NOTES

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



AS REQUIRED PER STD. E-2 OR E-3

AS REQUIRED PER STD. E-2 OR E-3

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

REVISIONS AND CORRECTIONS

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

FEB. 3, 1984 UPDATED TO 1986 SPECIFICATIONS

APPROVED:

SEPT. 22, 1981
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

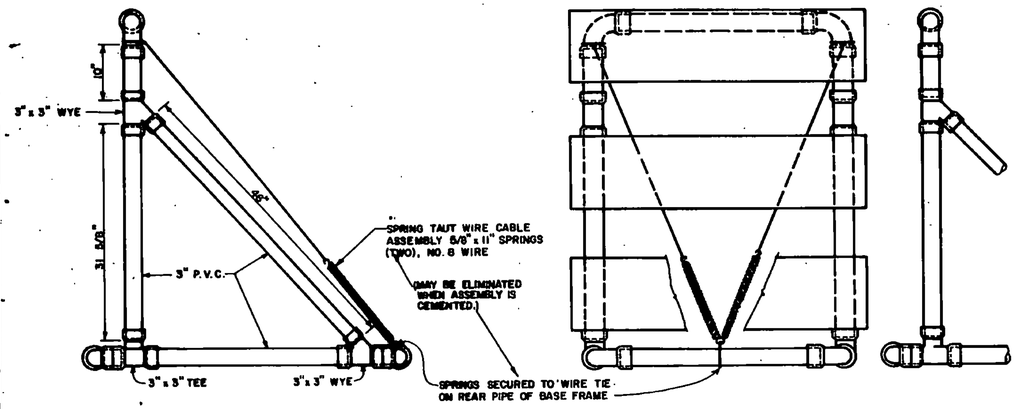
TRANSPORTATION DESIGN ENGINEER

DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

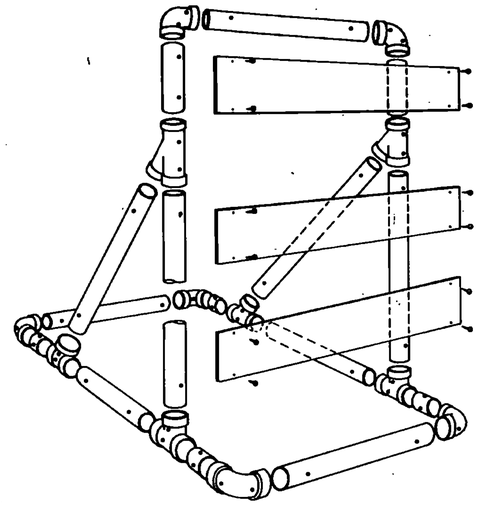
E-7



SIDE VIEW

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

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



BARRICADE ASSEMBLY

MATERIALS LIST
FOR ONE BARRICADE

3" Diameter Pipe	30 LF
3" 1/4 Bend Elbow	6 EA
3" Tees	2 EA
3" Wyes	4 EA
8" x 48" x.0 25 Barricade Panels	2 EA
5/8" x 11" No. 8 Spring	2 EA
1" No. 14 Pan Head Metal Screws	12 EA
No. 14 Black Annealed Tie Wire	15 LF

WARNING LIGHTS

WARNING LIGHTS, IF REQUIRED BY THE PLANS OR RESIDENT ENGINEER, SHALL BE AFFIXED TO THE TOP OF THESE BREAKAWAY BARRICADES WITH A MINIMUM MOUNTING HEIGHT OF 36 INCHES TO THE BOTTOM OF THE LENS. A FLASHING WARNING LIGHT SHOULD BE PLACED ON BARRICADES USED SINGLY AND STEADY BURN WARNING LIGHTS SHOULD BE PLACED ON BARRICADES USED IN A SERIES FOR TRAFFIC CHANNELIZATION. THE WARNING LIGHTS SHALL CONFORM TO THE REQUIREMENTS FOUND IN THE M.U.T.C.D. WHEN THE INTEGRAL WARNING LIGHT UNIT IS USED, THE BATTERY PACK SHALL CONTAIN A LIGHT WEIGHT DRY CELL BATTERY AND THE UNIT SHALL BE RESTRAINED WITH A TETHER CABLE OR WIRE (12" LENGTH) SECURELY FASTENED TO THE BARRICADES SO AS TO AVOID HAVING THE UNIT BECOME A DANGEROUS FLYING OBJECT IF THE BARRICADE IS HIT.

MATERIALS

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

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

COLORS

The barricades shown on the sheet shall have reflectorized orange and white stripes.
The orange shall conform with the standard color adopted by by the American Association of State Highway And Transportation Officials and approved by the U.S. Department of Transportation, Federal Highway Administration.

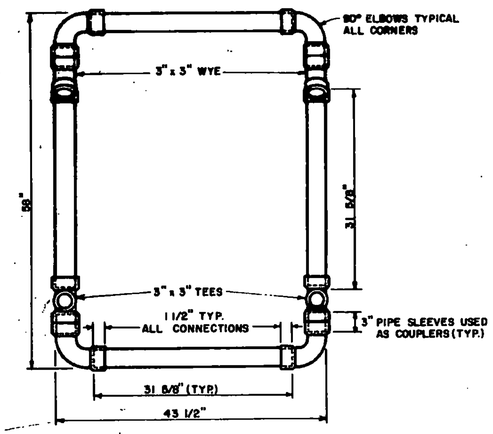
LOCATION

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

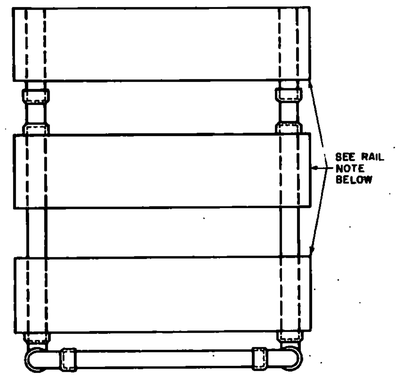
MAINTENANCE

Barricades shall be maintained in clean and legible conditions satisfactory to the Engineer.
They shall be completely visible to approaching traffic at all times. Damaged, defaced, or dirty barricades shall be repaired cleaned or replaced as ordered by the Engineer.

The P.V.C. Pipe and fittings shall be white in color If the fittings are not available, other colors may be substituted.
At least two (2) holes shall be drilled (3/16" to 1/4") in each section of pipe and fittings if the assembly is not cemented.

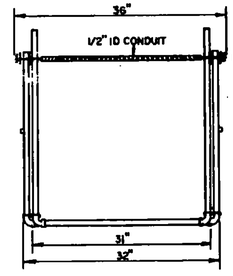


TOP VIEW OF BASE



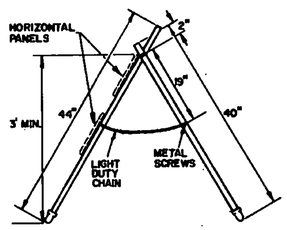
SEE STANDARD E-7 FOR RAIL DETAILS.
RAILS ATTACHED WITH 1" NO. 14 PAN HEAD METAL SCREW.

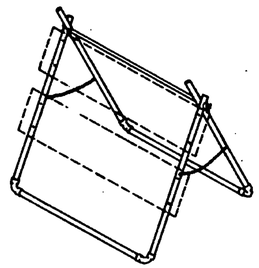
FRONT VIEW



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 & II BARRICADE DETAILS

TYPE I BARRICADES SHALL CONSIST OF ONE HORIZONTAL PANEL.

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

SEE STD E-7 FOR USE REQUIREMENTS.

REVISIONS & CORRECTIONS

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. Stickney
CHIEF ENGINEER

R O Munn
ASST. CHIEF ENGINEER

Loren C Jones
HIGHWAY ENGINEER

TRAFFIC SIGNS

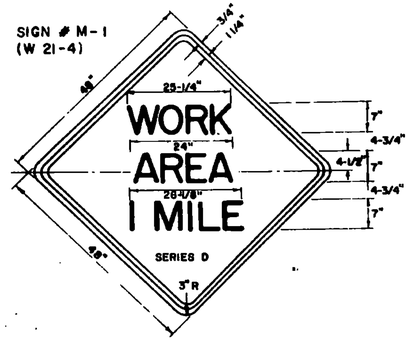
BREAKAWAY BARRICADE DETAILS

VERMONT AGENCY OF TRANSPORTATION

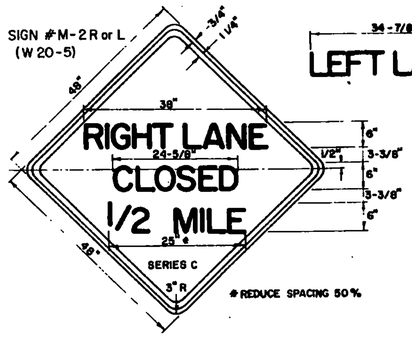
STANDARD

E-7a

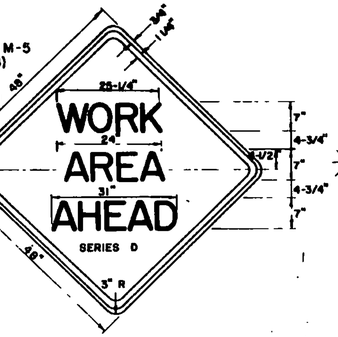
SIGN # M-1
(W 21-4)



SIGN # M-2 R or L
(W 20-5)

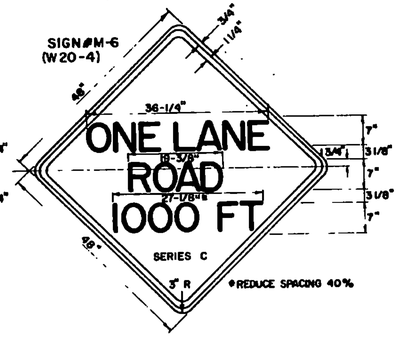


* REDUCE SPACING 50%



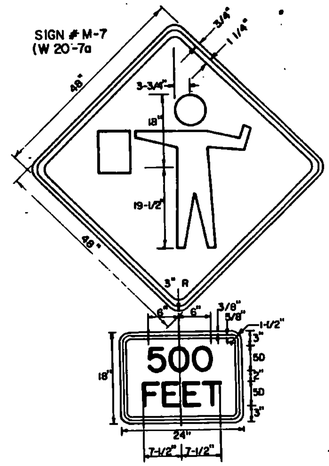
SIGN # M-5
(W 21-4)

SIGN # M-6
(W 20-4)

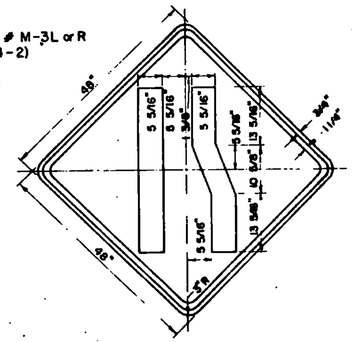


* REDUCE SPACING 40%

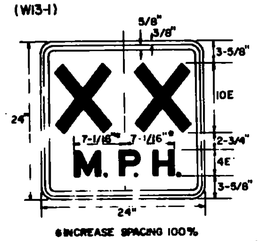
SIGN # M-7
(W 20-7a)



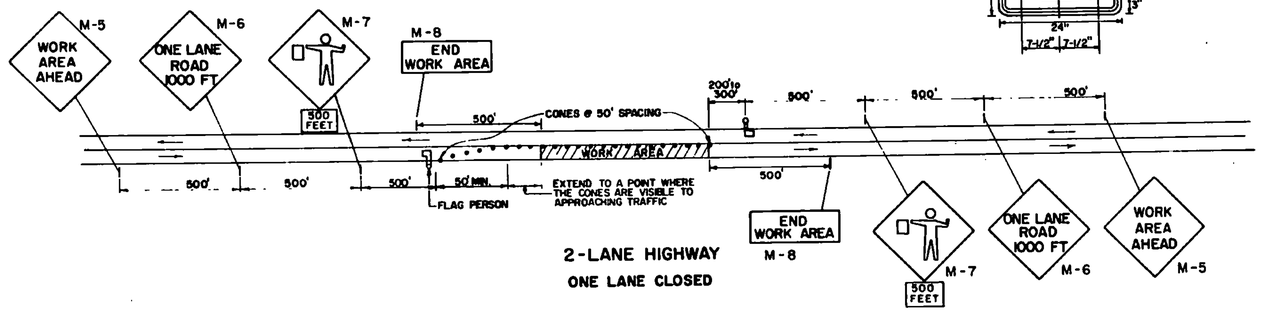
SIGN # M-3L or R
(W 4-2)

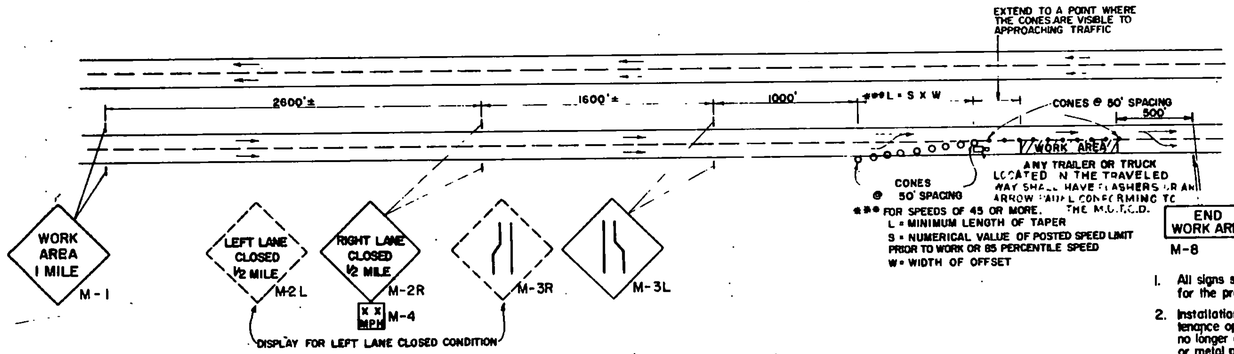


SIGN # M-4
(W13-1)



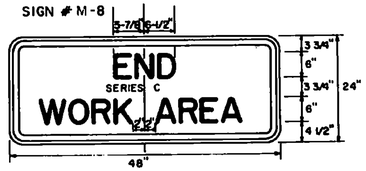
* INCREASE SPACING 100%





4-LANE DIVIDED HIGHWAY
ONE LANE CLOSED

SIGN # M-8



NOTES

1. 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.
2. 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.
3. Numbers in parenthesis indicate M.U.T.C.D. sign designations.
4. "ROAD WORK" or "BRIDGE WORK" may be substituded as the appropriate legend for signs #M-1 or M-5.

Reflectorization
All reflectorized material shall consist of encapsolated 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 overlayed 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.

REVISIONS & CORRECTIONS

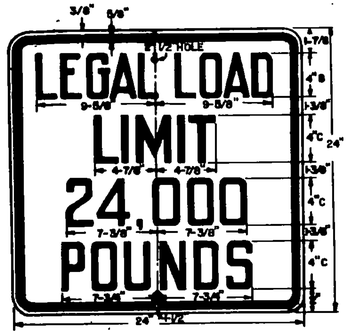
FEB. 29, 1972: SIGN ADDED UNDER DIRECTION OF FEDERAL HIGHWAY ADMINISTRATION
MAY 14, 1974 REFLECTIVE MATERIAL CHANGE.
JUNE 8, 1977 - REFLECTIVE MATERIAL NOTE CHANGED. SIGNS REFERENCED TO NUMBERS IN M.U.T.C.D. SIGNS NUMBERED.
AUG. 4, 1977 FLAGPERSON SIGN CHANGED TO SYMBOL.
SEPT. 12, 1977 NOTE ADDED FOR 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 15, 1988 TRUCK/TRAILER W/ FLASHER NOTE CLARIFIED
FEB. 3, 1988 - UPDATED TO 1988 SPECIFICATIONS

APPROVED:
DATE Jan. 26, 1972
R.V. Arnold
CHIEF ENGINEER
E.H. Otchkney
ASST. CHIEF ENGINEER
D.M. Lane
HIGHWAY ENGINEER

TYPICAL MAJOR MAINTENANCE OPERATION
(BRIDGE AND ROADWAY) APPROACH SIGNS

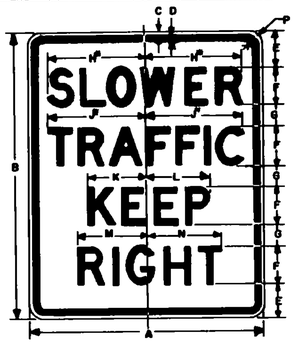
VERMONT AGENCY OF TRANSPORTATION

STANDARD
E-8



LINE 3 ALTERNATE - 16,000

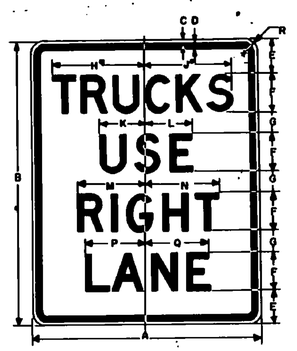
SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
STD BARR	24	30	3/8	5/8	3-5/8	4D	2-1/4	9-1/4	9-5/8	9-9/16	3-1/2	10	1-1/2
SPECIAL	36	48	5/8	7/8	6	6D	4	14	14-7/16	9-3/4	5-1/4	15	2-1/4
SPECIAL	48	60	3/4	1-1/4	7-1/4	6D	4-1/2	18-1/2	19-1/4	13-1/8	7	20	3



*REDUCE SPACING 25%

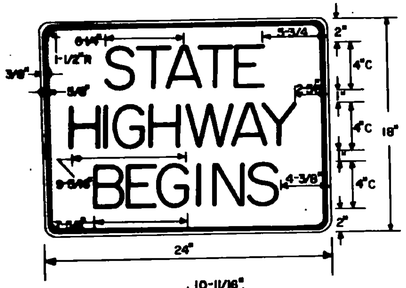
SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MIN. & STD.	24	30	3/8	5/8	3-5/8	4D	2-1/4	9-3/4	10	6	6-9/16	7-1/8	7-3/8	1-1/2
EXPWY.	36	48	5/8	7/8	6	6D	4	14-3/8	15	9	9-13/16	10-11/16	11-3/8	2-1/4
FWY.	48	60	3/4	1-1/4	7-1/4	8D	4-1/2	19-1/2	20	12	13-1/8	14-1/4	15-1/4	3

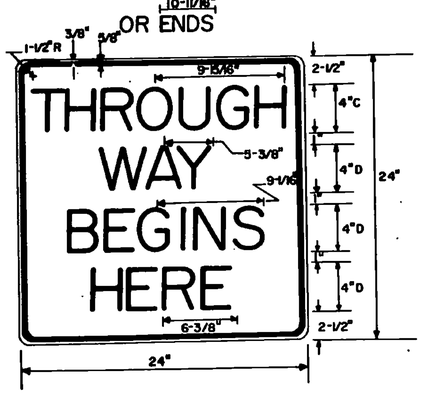
SIGN	DIMENSIONS (INCHES)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
MIN. & STD.	24	30	3/8	5/8	3-5/8	4D	2-1/4	9-13/16	9-11/16	7-9/16	7-11/16	9-11/16	9-13/16	6-7/8	7-1/16	1-1/2
EXPWY.	36	48	5/8	7/8	6	6E	4	14-3/4	14-1/2	11-5/16	11-1/2	8-1/2	8-3/4	10-5/16	10-5/8	2-1/4
FWY.	48	60	3/4	1-1/4	7-1/4	8E	4-1/2	19-5/8	19-3/8	15-1/8	15-3/8	11-3/8	11-5/8	13-3/4	14-1/8	3



*REDUCE SPACING 32%

SIGN	DIMENSIONS (INCHES)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
MIN. & STD.	24	30	3/8	5/8	3-5/8	4D	2-1/4	9-9/16	9-3/16	4-3/4	5	7-1/8	7-5/8	6-1/4	6-5/8	1-1/2
EXPWY.	36	48	5/8	7/8	6	6D	4	14-5/16	13-15/16	7-1/8	7-1/2	10-11/16	11-3/8	9-5/16	9-15/16	2-1/4
FWY.	48	60	3/4	1-1/4	8	10D	5	19-1/16	18-5/8	9-1/2	10	14-1/4	15-1/4	12-1/2	13-1/4	3





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.

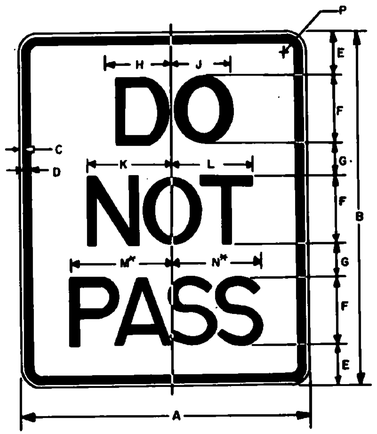
MATERIALS:
THE SIGN BASE MATERIALS USED FOR THE REGULATORY SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING OF THE MINIMUM THICKNESS NOTED.

	18"X24"	24"X18" 24"X24" 24"X30"	36"X48" 48"X60"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"
HIGH DENSITY OVERLAID PLYWOOD	1/2"	1/2"	5/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE FLAT TOP WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN.
THE TEXT OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

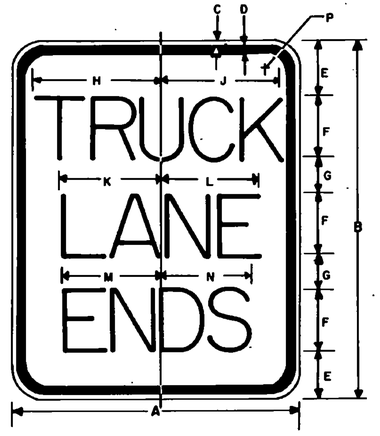
SPECIFICATIONS:
REGULATORY SIGNS SHALL MEET THE STANDARD STATE SPECIFICATIONS FOR TRAFFIC SIGNS.

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



½ REDUCE SPACING 40%

SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MIN.	18	24	3/8	5/8	3-1/2	4D	2-1/2	3-1/8	3-5/16	4-3/4	4-7/8	6-1/4	6-1/2	1-1/2
STD.	24	30	3/8	5/8	3-1/2	6D	2-1/2	4-1/8	4-5/16	5	7-1/8	7-3/8	9-3/8	1-1/2
EXPWY.	36	48	5/8	7/8	7	8D	5	6-1/4	6-5/8	9-1/2	9-3/4	12-1/2	8	2-1/4
FWY.	48	60	3/4	1-1/4	8	10D	7	7-3/4	8-5/8	11-7/8	12-1/4	15-5/8	15-1/4	3



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	6C	2-1/2	10-1/4	10-3/16	7-3/4	7-3/4	7-15/16	8	1-1/2
EXPWY.	36	48	5/8	7/8	7	8C	5	13-11/16	13-5/8	10-3/8	10-5/16	10-11/16	10-11/16	2-1/4
FWY.	48	60	3/4	1-1/4	8	10D	7	20-5/8	20-5/8	15-7/8	15-15/16	16-1/16	16-1/16	3

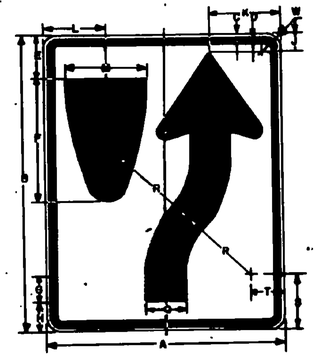
REVISIONS AND CORRECTIONS
[illegible] DATED TO 1988 SPECIFICATIONS

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

REGULATORY SIGNS

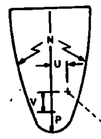
VERMONT AGENCY OF TRANSPORTATION

STANDARD
E-15A



SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	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	1-1/8
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	8-1/4	4-1/2	2	2-3/4	2-1/4
FWY.	12-1/2	16	60	4	8	18	11	6	2-11/16	5	3

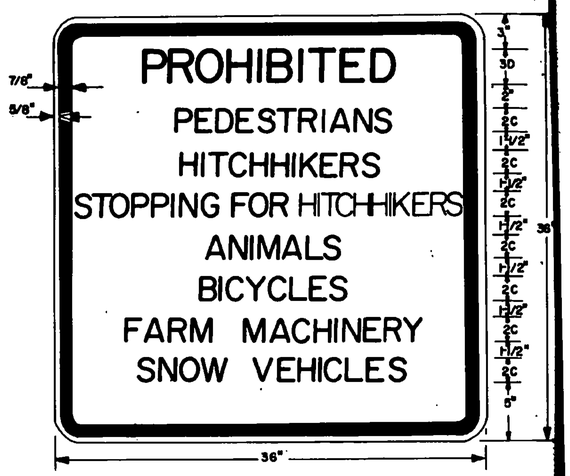


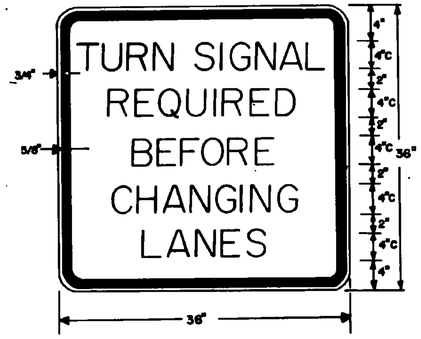
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
MIN	18	24	3/8	5/8	3	3E	2	8E	1-1/2	7-3/16	9-1/2
STD	24	30	3/8	5/8	4	4E	2	10E	1-1/2	9-9/16	7-5/16
EXPWY	36	48	5/8	7/8	6	6E	5	14E	2-1/4	14-3/8	11
FWY.	48	60	3/4	1-1/4	8	8E	4	20E	3	19-1/8	14-5/8

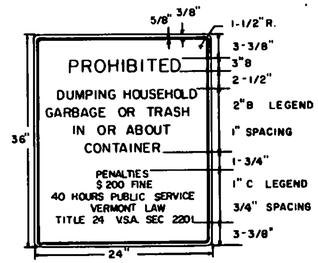
* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.

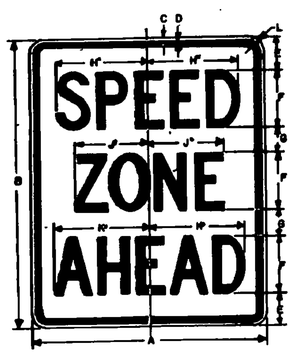
SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD.& MIN.	24	30	3/8	5/8	4	4C	2	10D	1-1/2	9-3/16	6-13/16
EXPWY.	36	48	5/8	7/8	6	6C	5	14D	2-1/4	13-3/4	10-5/16
FWY.	48	60	3/4	1-1/4	8	8C	6	16D	3	18-3/8	13-5/8

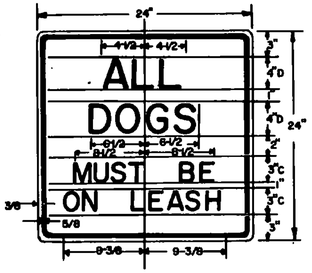
* OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.





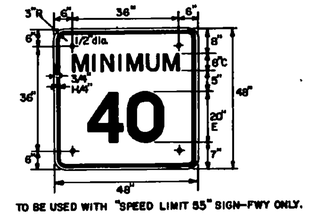






SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
EXPWY	30	24	3/8	5/8	3-1/2	4C	2-1/2	40	12-1/2	13	12-3/4	8-7/16	7	1-1/2
FWY.	48	36	5/8	7/8	5	6D	4	6D	20-7/16	21-1/8	19-1/8	10-1/16	10-9/16	2-1/4

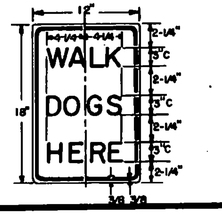
* FOR FWY SIZE, REDUCE SPACING 50%

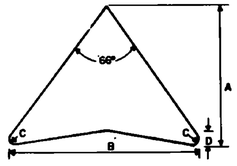


TO BE USED WITH "SPEED LIMIT 55" SIGN-FWY ONLY.

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

* FOR STD SIZE, REDUCE SPACING 40%.





ARROW HEAD	DIMENSIONS (INCHES)				
	SIZE	A	B	C	D
MINIMUM	18X24	7-1/8	8-1/2	5/8	1-1/8
STANDARD	24X30	9-1/2	11-5/8	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

MATERIALS:

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

	12"X18" 18"X24"	24"X24" 24"X30" 30"X24" 30"X30"	36"X12" 36"X36" 36"X48" 48"X36" 48"X60"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"
HIGH DENSITY OVERLAID PLYWOOD	1/2	1/2	3/8"
GALVANIZED FLAT SHEET STEEL	18 GAGE	16 GAGE	14 GAGE

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE FLAT TOP WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN.

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

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.

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. – 6 BH)

– CHANGED "PROHIBITED DUMPING HOUSEHOLD GARBAGE" SIGN

DEC. 27, 1984 – CLARIFIED KEEP RIGHT SYMBOL

FEB. 3, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED

DATE JULY 18, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

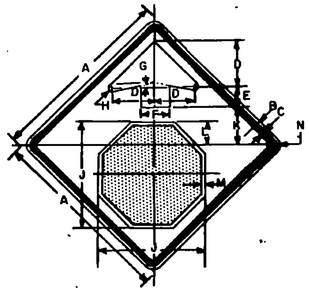
SURVEY AND PLANS ENGINEER

REGULATORY SIGNS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

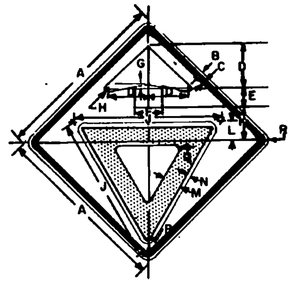
E-15B



COLORS

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

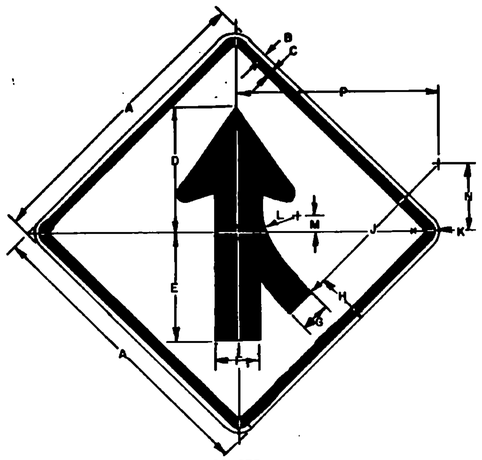
SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
MIN.	30	1/2	3/4	7-1/2	3-3/4	5	5/8	5/16	25	6-1/4	2-7/8	1/2	1-7/8
STD.	36	5/8	7/8	9	4-1/2	6	3/4	3/8	19	7-1/2	3-1/8	5/8	2-1/4
SPECIAL	48	3/4	1-1/4	12	6	8	1	1/2	25-1/8	10	4-1/2	3/4	3



COLORS

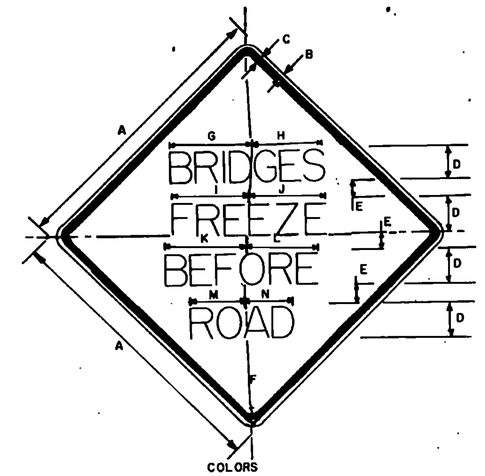
BORDER AND ARROW - BLACK (NON-REFL)
SYMBOL- RED BORDER ON WHITE BACKGROUND (REFL)
BACKGROUND - YELLOW (REFL)

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



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

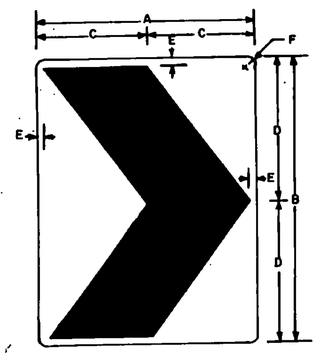
SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
MIN.	24	3/8	5/8	10-1/4	8-3/4	3-1/2	23/8	4-3/16	22-1/4	1-1/2	6-3/8	2-5/8	10-3/8	22-3/16
STD	30	1/2	3/4	13	11	4-3/8	3	5-1/4	28	1-7/8	8	3	13	27-3/4
EXPWY.	36	5/8	7/8	15-3/4	13-1/4	5-1/4	3-5/8	6-5/16	33-5/8	2-1/4	9-5/8	4	15-5/8	33-5/16
FWY.	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

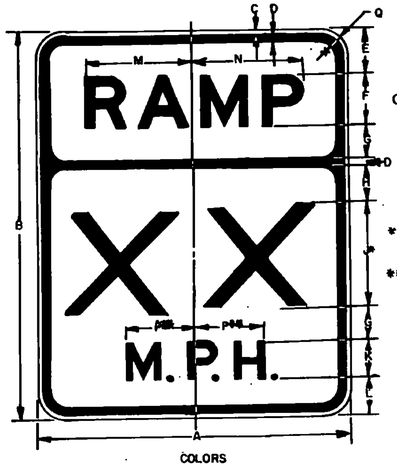
LEGEND - BLACK (NON-REFL)
BACKGROUND - YELLOW (REFL)

SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
STD.	36	3/8	5/8	5C	2	2	11-1/2	1-1/2	9-3/16	9-7/8	10-1/4	0-1/4	6-7/8	6-7/8
FWY./EXP.	48	3/4	1-1/4	6C	3	3	13-1/2	3-1/2	11-13/16	11-13/16	12-1/4	2-5/16	8-5/16	8-5/16



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

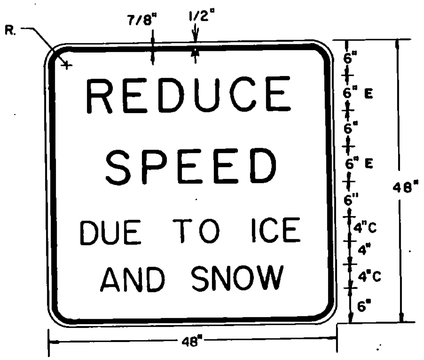
**INCREASE SPACING 100%

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



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

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 TRANSPORTION OFFICIALS APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

MATERIALS

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

	12" X 18" 18" X 24"	24" X 24" 24" X 30" 30" X 30" 30" X 36"	36" X 36" 36" X 48"	48" X 48" 48" X 60"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"
HIGH DENSITY OVERLAID 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 BLACK PORTIONS OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. WHEN HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION.

SPECIFICATIONS

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

TEXT DESIGN

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

REVISIONS AND CORRECTIONS

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

FEB. 3, 1986 — UPDATED TO 1986 SPECIFICATIONS

APPROVED

DATE OCT. 3, 1984

DIRECTOR OF ENGINEERING AND CONSTRUCTION

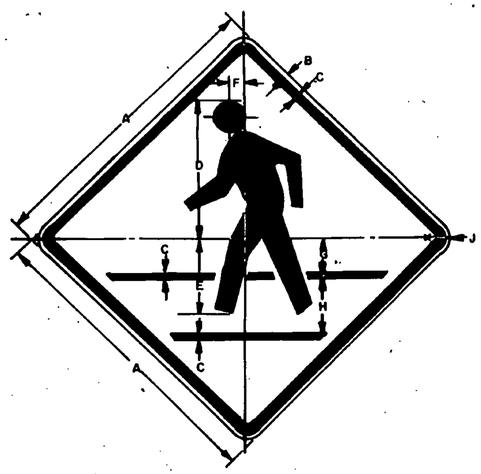
CHIEF OF DESIGN

SURVEY AND PLANS ENGINEER

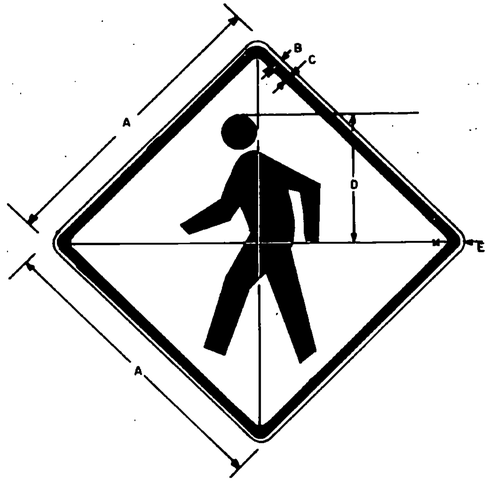
WARNING SIGNS

VERMONT AGENCY OF TRANSPORTATION

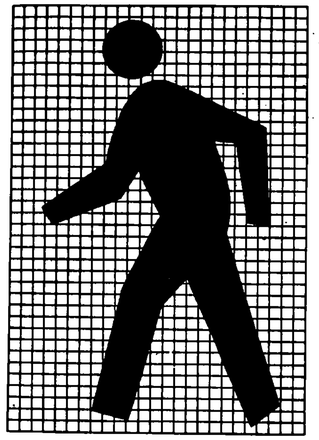
STANDARD
E-19

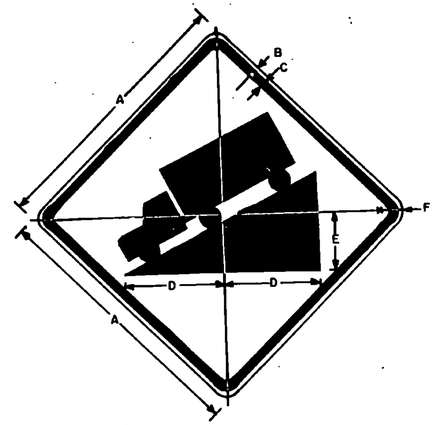


SIGN	DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	J
BIKE	18	3/8	5/8	8-3/8	4-3/4	3/4	2-3/8	3-5/8	1-1/2
MIN.	24	3/8	5/8	11	6-3/8	1-3/16	3-1/8	4-3/4	1-1/2
STD.	30	1/2	3/4	14	8	1-1/2	4	6	1-7/8
EXPWY.	36	5/8	7/8	16-3/4	9-5/8	1-13/16	4-3/4	7-1/4	2-1/4
SPECIAL	48	3/4	1-1/4	22	12-3/4	2-3/8	6-1/4	9-1/2	3

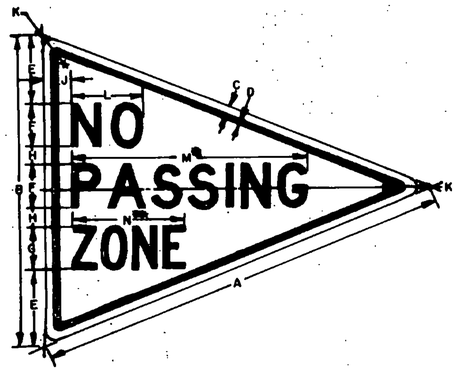


SIGN	DIMENSIONS (INCHES)				
	A	B	C	D	E
MIN.	24	3/8	5/8	11	1-1/2
STD.	30	1/2	3/4	13-1/2	1-7/8
EXPWY.	36	5/8	7/8	16	2-1/4
SPECIAL	48	3/4	1-1/4	22	3





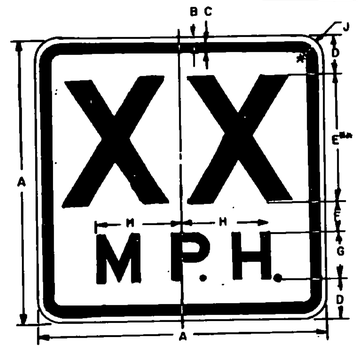
SIGN	DIMENSIONS (INCHES)					
	A	B	C	D	E	F
MIN.	24	3/8	5/8	8-3/4	6	1-1/2
STD.	30	1/2	3/4	11	7-1/2	1-7/8
EXPWY.	36	5/8	7/8	13-1/4	9	2-1/4
FWY.	48	3/4	1-1/4	17-1/2	12	3



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	26-13/16	12-3/4
SPECIAL	64	48	3/4	1-1/4	12	6D	6C	3	4	3	10-3/4	33-11/16	16-9/16

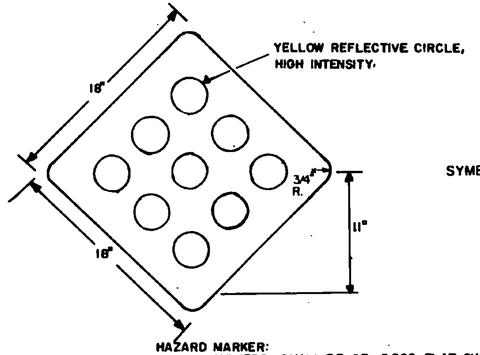
* FOR STD. SIZE REDUCE SPACING 20%

** FOR STD. SIZE REDUCE SPACING 35%

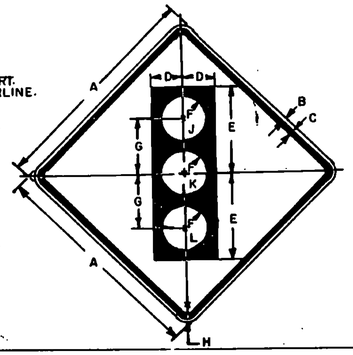


SIGN	DIMENSIONS (INCHES)								
	A	B	C	D	E	F	G	H	J
STD.	18	3/8	5/8	2-1/2	8E	2	3E	5-5/16	1-1/2
SPECIAL	24	3/8	3/8	3-5/8	10E	2-3/4	4E	7-1/16	1-1/2

** OPTICALLY SPACE NUMERALS ABOUT VERT. CENTERLINE.



HAZARD MARKER:
HAZARD MARKERS SHALL BE OF 0.060 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	13-3/4	3-3/4	8-3/4	1-7/8
STD. & MIN.	36	5/8	7/8	6-3/4	15-3/4	4-1/4	10	2-1/4
SPECIAL	48	3/4	1-1/4	7-1/2	20	5	12-1/2	3

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

COLORS

SYMBOLS

THE WARNING SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT AND 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"X18"	24"X24" 30"X30"	36"X36"	48"X48"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"
HIGH DENSITY OVERLAID 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

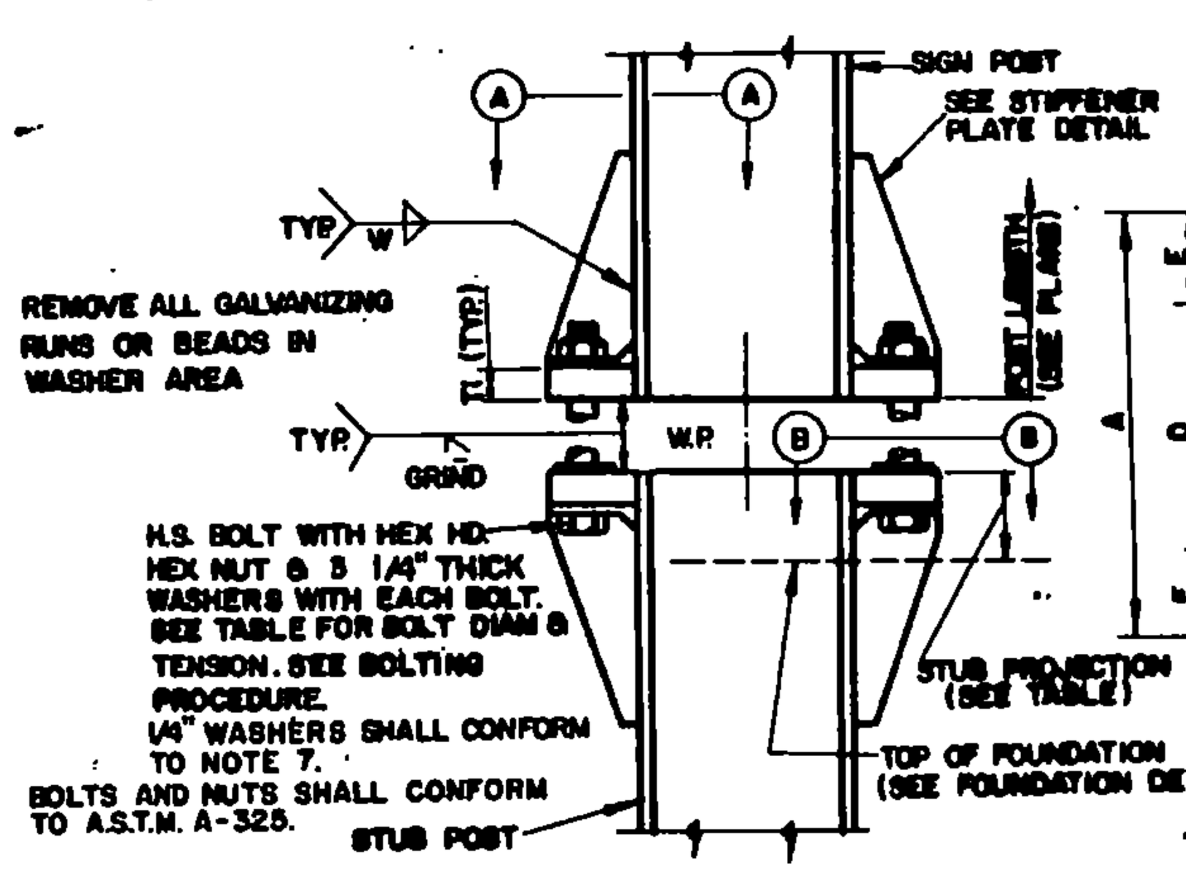
CHIEF OF DESIGN

SURVEY AND PLANS ENGR.

WARNING SIGNS

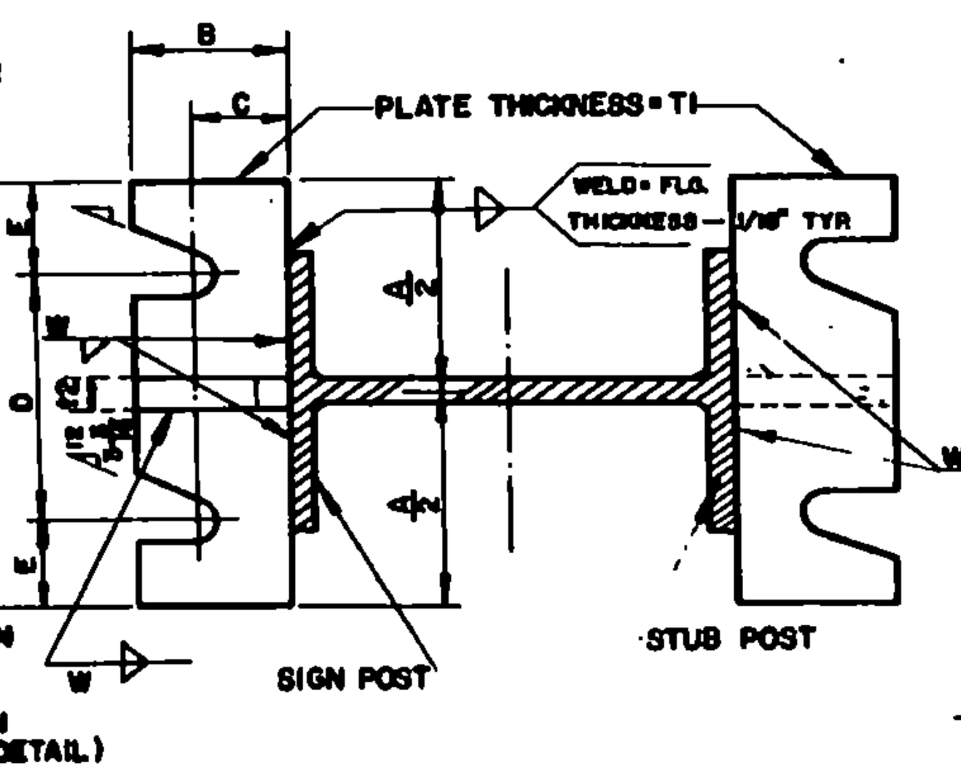
VERMONT AGENCY OF TRANSPORTATION

STANDARD E-19B



SIGN POST AND STUB POST

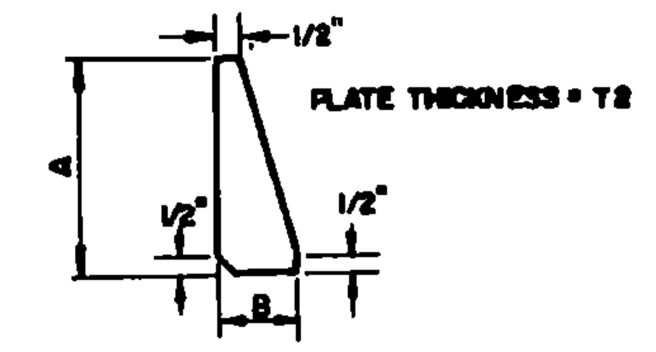
ELEVATION



SECTION A-A SECTION B-B

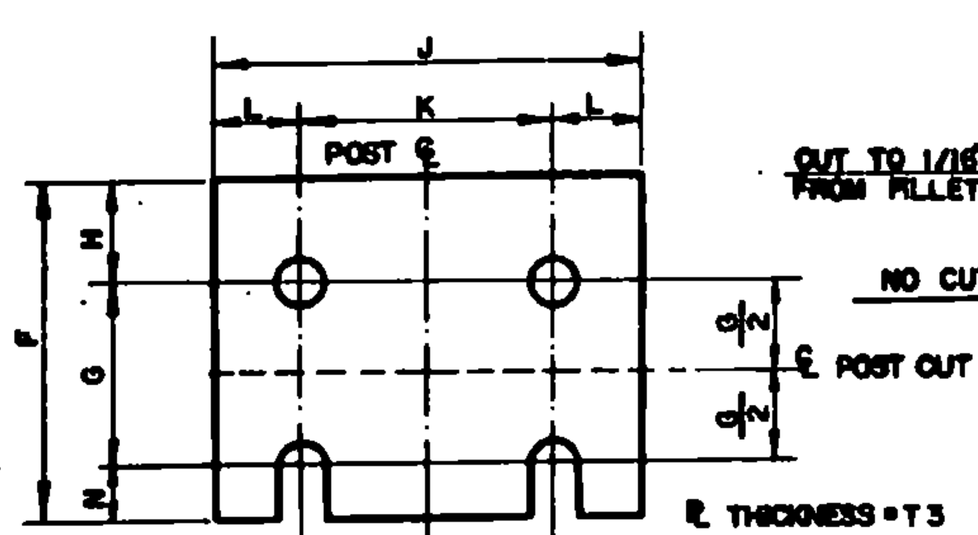
(SEE TABLE FOR DIMENSIONS)

SECTIONS SHOWN ARE FOR INSTALLATIONS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE HAND FOR INSTALLATIONS ON LEFT SHOULDER OF A ONE WAY HIGHWAY



STIFFENER PLATE

(SEE TABLE FOR DIMENSIONS)

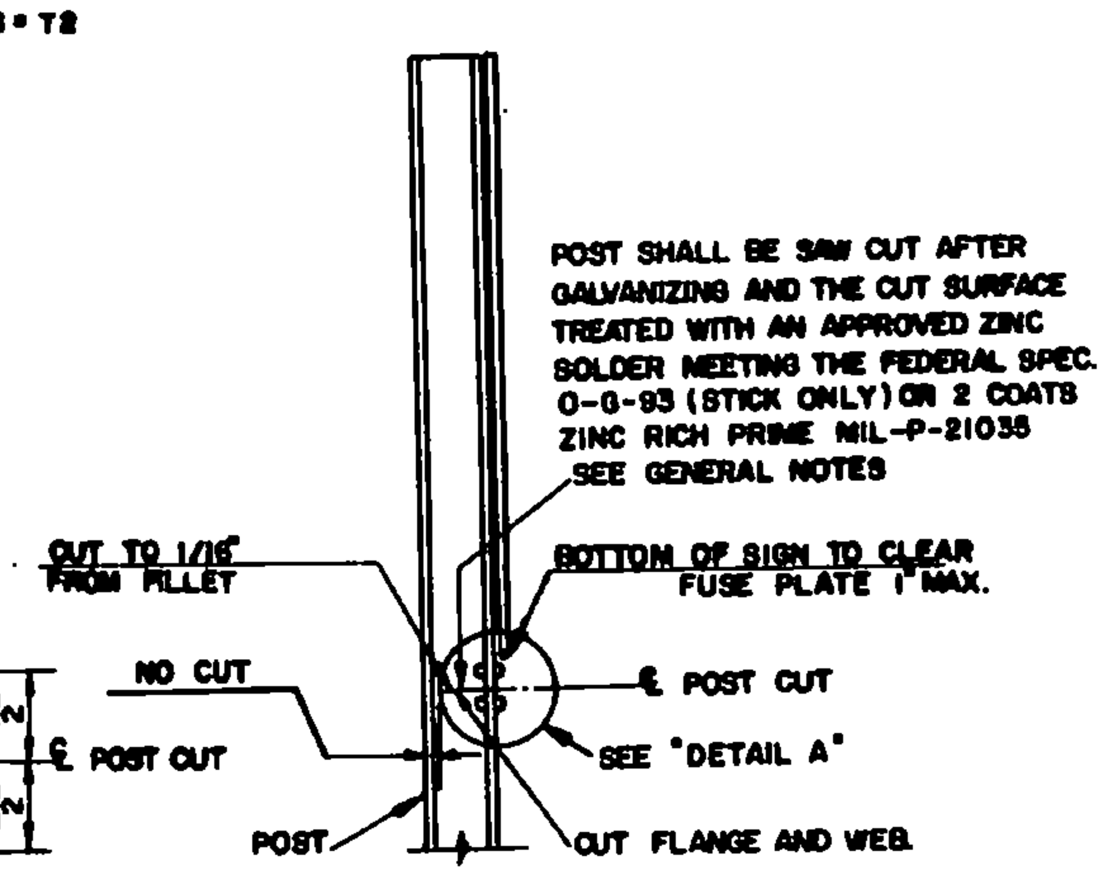


HOLE DIAMETER = DI.

USE H.S. BOLTS WITH HEX. HD. AND HEX. NUTS, ONE 1/4" THICK FLAT WASHER UNDER EA. BOLT HEAD, AND ONE 1/4" THICK FLAT WASHER UNDER NUT.
1/4" WASHERS SHALL CONFORM TO NOTE 7.

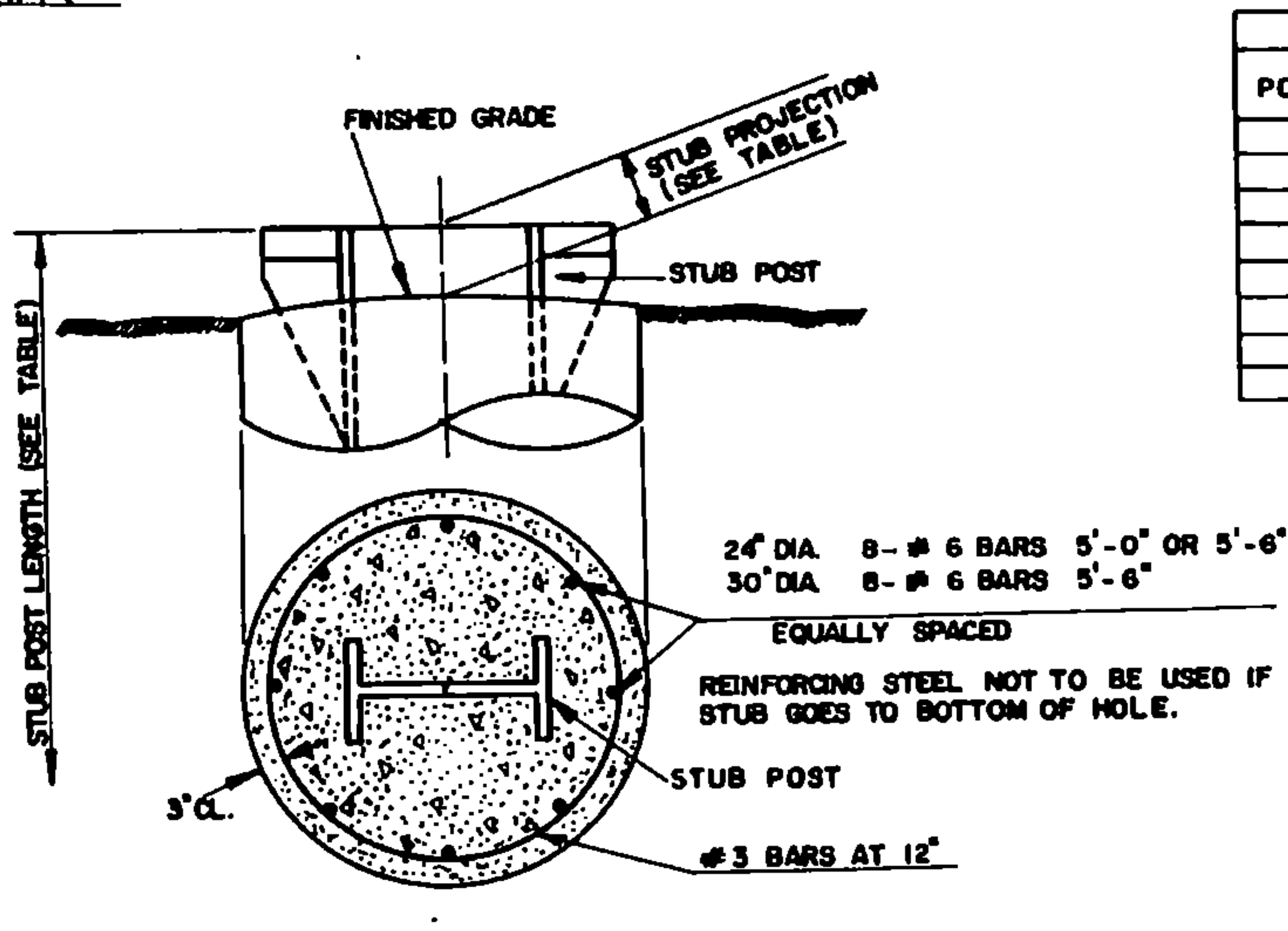
FUSE PLATE

(SEE TABLE FOR DIMENSIONS AND WEIGHT)

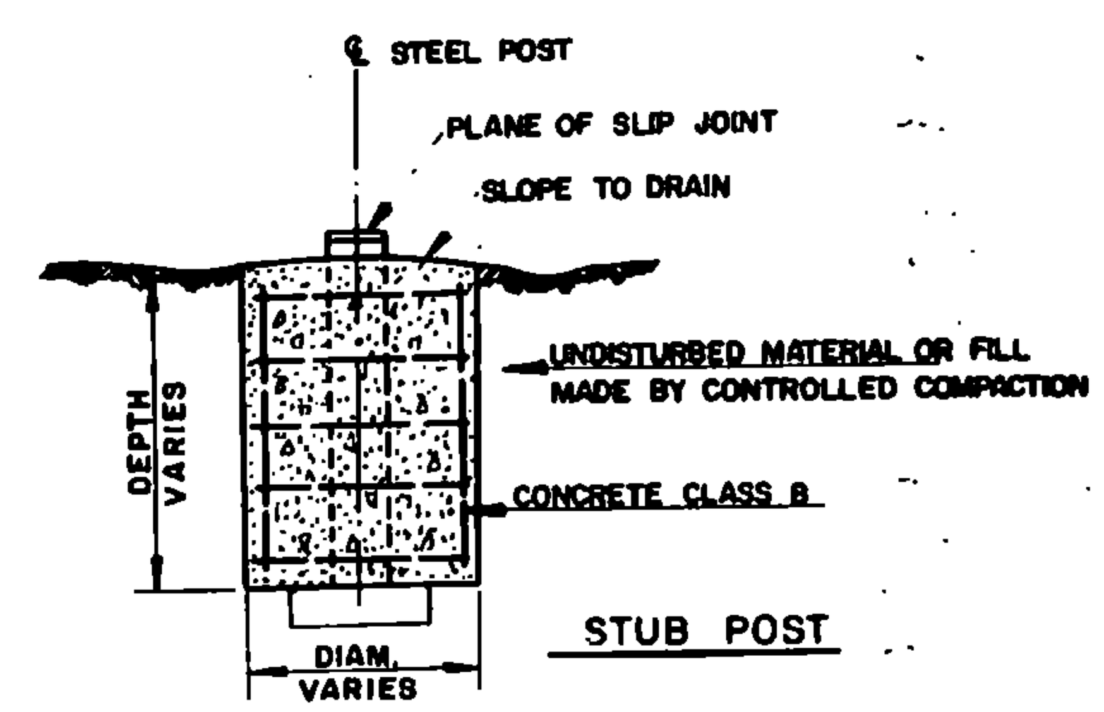


FRICTION FUSE PLATE

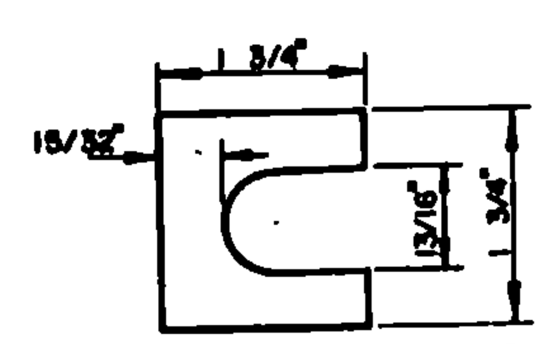
W-SHAPED POSTS



FOUNDATION DETAIL

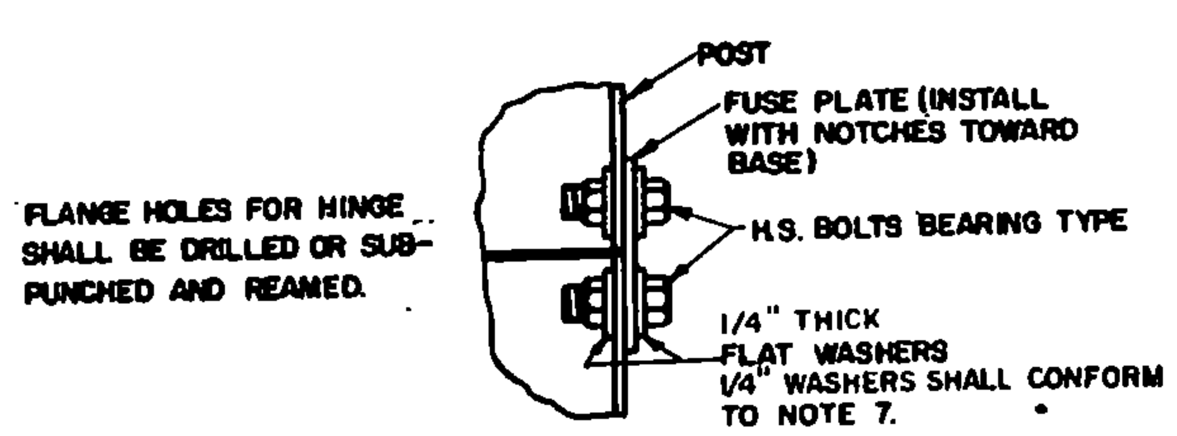


STUB POST



FURNISH 2 - .012"± THICK AND 2 - .032"± THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK OR STRIP CONFORMING TO A.S.T.M. B 36

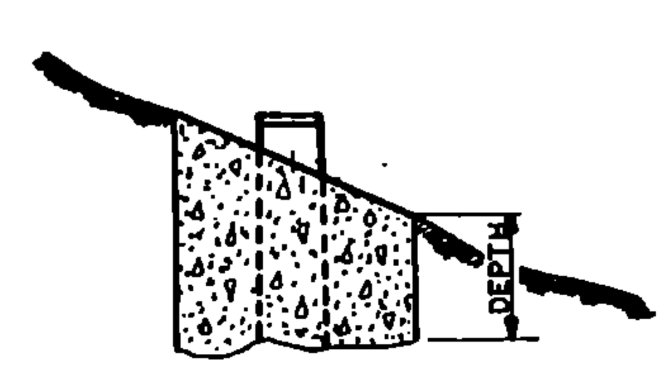
SHIM DETAIL



"DETAIL A" HINGE

(SEE FABRICATOR NOTE)

NOTE: CUT SURFACES WILL NOT BE TREATED UNTIL PLATE IS INSTALLED AND ALL BOLTS FULLY TIGHTENED.



FOUNDATION DETAILS

POST SIZE	BASE CONNECTION DATA TABLE: BOLT SIZE / BOLT FORCE LB	A	B	C	D	E	T1	T2	W	R	FUSE PLATE DATA TABLE: F	G	H	J	K	L	N		DI.	T3	BOLT DIA.
W6x9	5/8" Ø X 3 1/2" 2660 *	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	11/32"	3 5/16"	2"	1 1/16"	4"	2 1/16"	7/8"	1/2"		9/16"	1/4"	1/2
W6x12											3 5/8"	2"	1 1/8"	4"	2 1/4"	7/8"	1/2"		9/16"	1/4"	1/2"
W6x15											4 3/16"	2 1/2"	1 1/4"	6"	3 1/2"	1 1/4"	5/8"		11/16"	3/8"	5/8"
W8x18											4 3/16"	2 1/2"	1 1/4"	5 1/4"	2 3/4"	1 1/4"	5/8"		11/16"	3/8"	5/8"
W8x21	3/4" Ø X 4 1/2" 3600 **	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	13/32"	4 3/4"	2 1/2"	1 1/2"	5 1/4"	2 3/4"	1 1/4"	3/4"		13/16"	1/2"	3/4"
W10x22											5 1/4"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	3/4"		13/16"	1/2"	3/4"
W10x26											5 1/4"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	3/4"		13/16"	1/2"	3/4"
W12x30		7"			4"	1 1/2"					5 1/4"	3"	1 1/2"	6 1/2"	3 1/2"	1 1/2"	3/4"		13/16"	1/2"	3/4"

* 5/8" BOLTS SHALL HAVE AT LEAST A THREAD LENGTH OF 2 INCHES
** 3/4" BOLTS SHALL HAVE AT LEAST A THREAD LENGTH OF 2 1/4 INCHES
THESE BOLTS SHALL BE FURNISHED WITH 2 NUTS F,R EACH BOLT.

FOUNDATION DATA					
POST SIZE	BASE DIA.	BASE DEPTH SEE NOTE 11	MIN. STUB LENGTH	STUB PROJ.	VOLUME OF SINGLE BASE
W6x9	24"	5'-0"	2'-0"	3"	0.60 C.Y.
W6x12	24"	5'-0"	2'-0"	3"	0.60 C.Y.
W6x15	24"	5'-0"	2'-6"	3"	0.60 C.Y.
W8x18	24"	5'-6"	2'-6"	3"	0.65 C.Y.
W8x21	24"	5'-6"	3'-0"	2 1/2"	0.65 C.Y.
W10x22	24"	5'-6"	3'-0"	2 1/2"	0.65 C.Y.
W10x26	24"	6'-0"	3'-0"	2 1/2"	0.70 C.Y.
W12x30	30"	6'-0"	3'-0"	2 1/2"	1.1 C.Y.

FOUNDATION FOR W-SHAPED POSTS

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. Make sure all bolts are from the same stock.
2. Try nuts on bolt threads, making sure they turn easily.
3. Place (3) bolts in Skidmore - Wilhelm device. Torque to proper tension in device. Calibrate torque wrench by checking torque on these three bolts when under proper tension in device.
4. The testing and calibration shall be done at the Vermont Highway Department's Material Laboratory or at such place designated by them.
5. Use the average of the three torques on similar bolts in the real support.
6. Assemble posts to stub with bolts and with three 1/4" flat washers, one each, under head of bolt, between plates, and under nut.
7. Shim as required to plumb post.
8. Tighten all bolts the maximum possible with a 12" to 15" wrench to bed washers and shims and to clean bolt threads. Then loosen each bolt in turn and retighten in a systematic order to the prescribed tension.
9. Then base plate bolts will be torqued to prescribed bolt tension on the plans. After the initial torquing use a second nut to insure that the first nut will not back off. The contractor, with the Department inspector will return to the sign two more times at intervals of 30 days ± for the purpose of checking and reestablishing the prescribed torque. The second nut shall remain as a lock nut.

FABRICATION NOTE

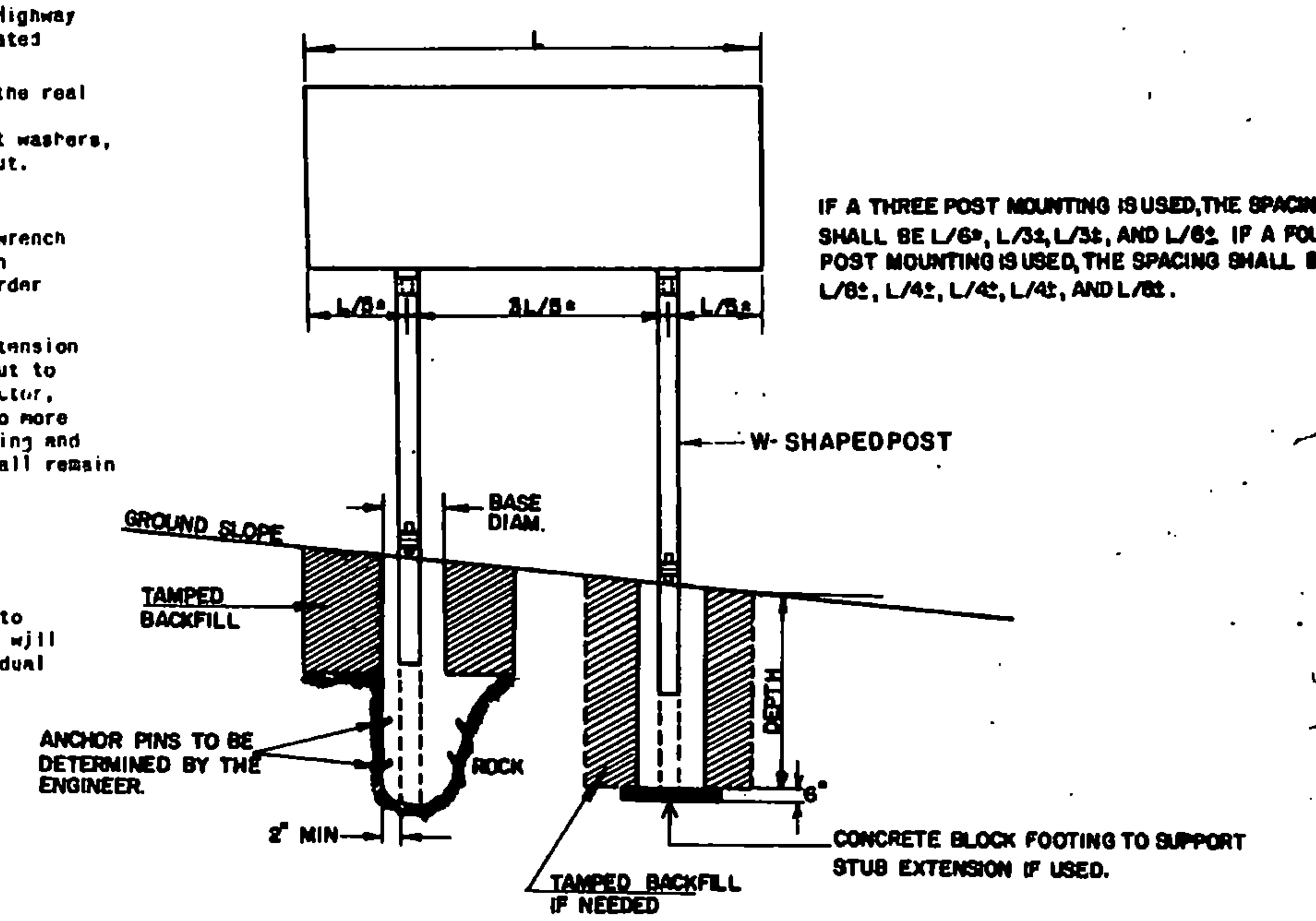
(Important)

All friction fuse bolts shall be tightened by the fabricator to the prescribed bolt tension mentioned below. The contractor will be held responsible to check and certify that the below residual tensions are obtained.

BOLT SIZE	MIN. RESIDUAL BOLT TENSION
1/2" Ø	12050 LBS
5/8" Ø	19200 LBS
3/4" Ø	28400 LBS
7/8" Ø	36050 LBS

GENERAL NOTES

1. DESIGN CONFORMS WITH AASHTO. SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGN.
2. MATERIAL AND FABRICATION SHALL CONFORM TO THE REQUIREMENTS OF STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SHEETS AND SPECIFICATIONS.
3. ALL STRUCTURAL STEEL SHALL CONFORM TO A.S.T.M. A 36
4. ALL STRUCTURAL STEEL, BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AS PER A.S.T.M. A-123 EXCEPT AS NOTED.
5. ALL HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AS PER A.S.T.M. A-123 HOLES SHALL BE DRILLED.
THE POST CUT SHALL BE A SAW CUT ONLY. ALL OTHER CUTS EXCLUDING POST CUTS MAY BE FLAME CUT PROVIDED ALL EDGES ARE GROUND. METAL PROJECTING BEYOND THE PLATE FACE WILL NOT BE PERMITTED.
6. ALL HIGH STRENGTH BOLTS AND NUTS SHALL CONFORM TO A.S.T.M. A-325.
7. ALL 1/4" FLAT WASHERS SHALL CONFORM TO THE HARDNESS REQUIREMENTS FOR A.S.T.M. A-325 WASHERS.
8. PAINT FOR SAW CUT SHALL BE A SINGLE COMPONENT ZINC-RICH COMPOUND YIELDING A DRIED FILM OF AT LEAST 85% PURE ZINC. IT SHALL MEET OR EXCEED THE REQUIREMENT OF MIL-P-21035.
9. ALL SIGNS MOUNTED ON STEEL POSTS SHALL BE ERECTED A MINIMUM OF 7' ABOVE EDGE OF PAVEMENT TO BOTTOM OF SIGN AND THE INSIDE EDGE OF THE SIGN POSITIONED A MINIMUM OF 30' FROM EDGE OF PAVEMENT UNLESS OTHERWISE INDICATED ON THE PLANS.
10. EXTREME CARE SHOULD BE TAKEN TO KEEP THE SLIP JOINT FREE OF ANY FOREIGN MATERIAL, EITHER BY WRAPPING THE JOINT OR THOROUGH CLEANING IMMEDIATELY AFTER POURING OF CONCRETE.
11. IF BASE DEPTH CANNOT BE OBTAINED OR WET AND/OR UNUSUAL SOIL CONDITIONS ARE ENCOUNTERED, THE RESIDENT SHOULD CONTACT THE TRAFFIC DESIGN SECTION, AGENCY OF TRANSPORTATION.



IF A THREE POST MOUNTING IS USED, THE SPACING SHALL BE L/6±, L/3±, L/3±, AND L/6±. IF A FOUR POST MOUNTING IS USED, THE SPACING SHALL BE L/8±, L/4±, L/4±, L/4±, AND L/8±.

CONSTRUCTION METHOD.

HOLES FOR POST FOOTINGS MAY BE AUGERED OR DUG. IF THE MATERIAL IS FIRM, OR ALL DISTURBED SOIL AROUND THE CIRCUMFERENCE OF THE AUGERED HOLE IS REMOVED, THE HOLES MAY BE LEFT WITH EARTH SIDES. IF NOT, A SUITABLE FORM APPROVED BY THE ENGINEER SHALL BE USED. CORRUGATED METAL CULVERT PIPE OR PAPER FORMS MANUFACTURED FOR USE AS CONCRETE COLUMN FORMS WILL BE ACCEPTABLE. IF THE STUB IS EXTENDED TO THE BOTTOM OF THE HOLE, A CONCRETE BLOCK FOOTING SHALL BE UTILIZED TO SUPPORT THE POST AND THE POST SHALL BE HELD SECURELY IN PLACE AT THE BOTTOM. THIS MAY BE DONE BY EMBEDDING THE POST AND CONCRETE BLOCK FOOTING IN WET CONCRETE AND ALLOWING TO SET WITH THE POST SECURED IN POSITION, PLUMBED AND PROPERLY BRACED, THE REMAINING FOOTING MAY BE POURED. THE TIME BETWEEN POURS. FOR THE CURING OF THE CONCRETE SHALL BE AS DETERMINED BY THE ENGINEER. THE FORM SHALL BE LEFT IN PLACE AND THE HOLE PROPERLY BACKFILLED. NO PART OF THE FORM SHALL SHOW ABOVE THE GROUND LINE WHEN THE WORK IS COMPLETED.

REVISIONS AND CORRECTIONS

DEC. 12, 1975 REVISED TO CONFORM WITH SPECIFICATION.
DEC. 15, 1978 REVISED TO CHANGE FOOTING SIZES, AND 1/4" WASHERS.
MAY 29, 1979 MISCELLANEOUS REVISIONS TO TABLES, NOTES AND DETAILS, INCLUDING NEW POST SIZE DESIGNATIONS.
FEB. 3, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED DATE Dec. 21, 1971

R.H. Arnold
CHIEF ENGINEER

E.H. Stickney
ASST. CHIEF ENGINEER

G.M. Lane
HIGHWAY ENGINEER

W-SHAPED STEEL
SIGN SUPPORTS & FOUNDATIONS

VERMONT AGENCY OF TRANSPORTATION

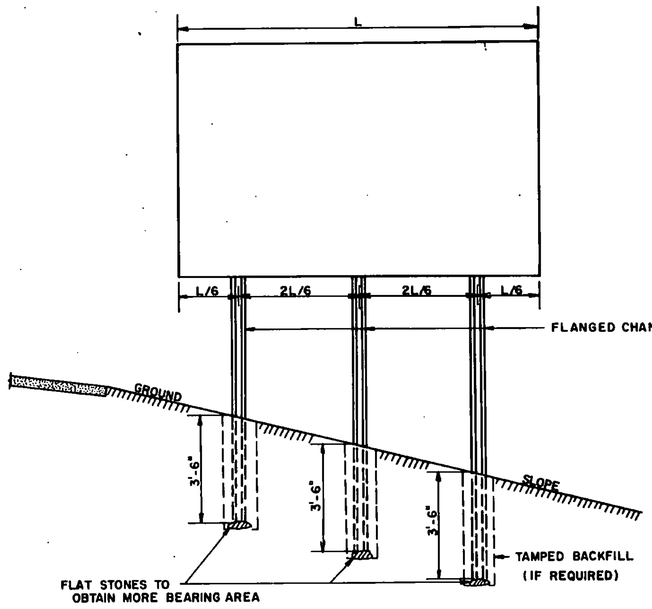
STANDARD

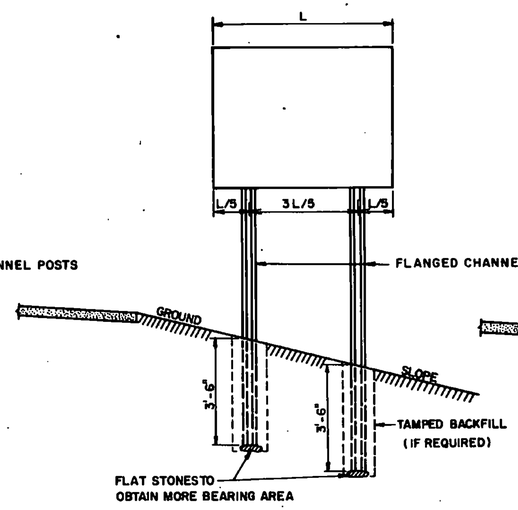
E-24

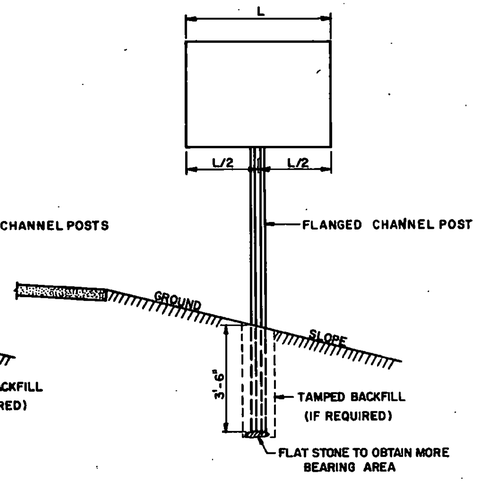
GENERAL NOTES

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

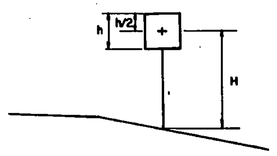
CONSTRUCTION METHODS – POSTS MAY BE DRIVEN OR SET IN A DUG HOLE AND BACKFILLED. IF DRIVEN, A DRIVING CAP SHALL BE USED. IF SET IN A DUG HOLE, THE EXCAVATION AND BACKFILL WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED AS BEING INCLUDED IN UNIT PRICES FOR OTHER ITEMS IN THE CONTRACT. THE DUG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







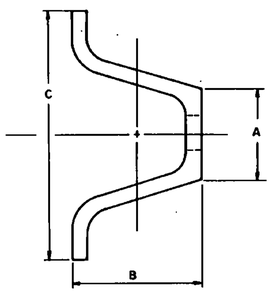
IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED STEEL POSTS WILL BE SET AND GROUTED 12" DEEP IN THE LEDGE.

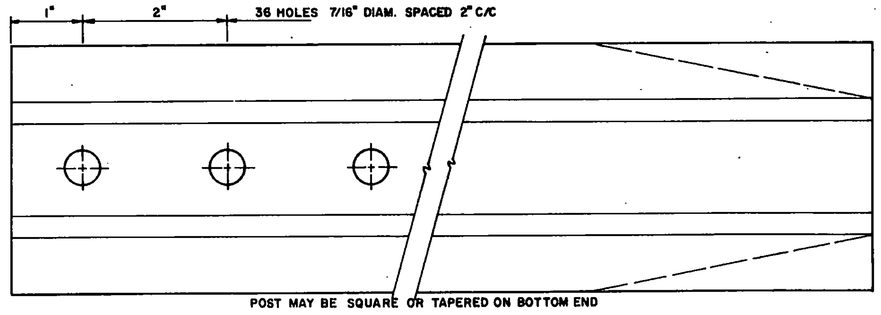


POST SELECTION CHART		
SIGN AREA $(FT^2) \times H(FT) \leq Sv$ (SELECTION VALUE)		
POST SIZE	Sv	DESIGN CRITERIA
2 LB/FT. 2 1/2 LB/FT. 3 LB/FT.	62 77 107	WIND SPEED = 60 MPH (10-YEAR MEAN RECURRENCE INTERVAL) WIND PRESSURE = 12 PSF STEEL MIN YIELD Fy=50,000 PSI ALLOWABLE STRESS=(1.4)0.55Fy

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

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





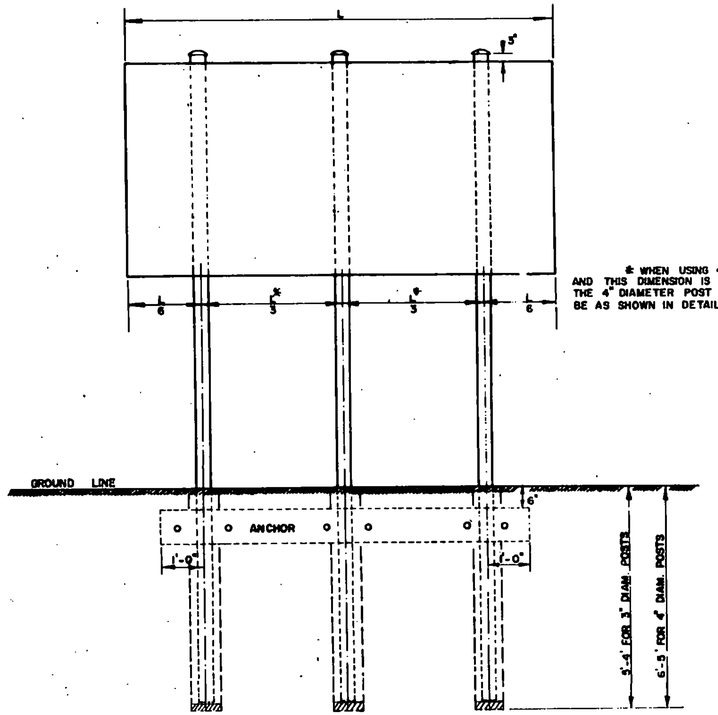
REVISIONS AND CORRECTIONS
FEB. 8, 1978 — HEIGHT OF SIGNS ADDED.
DEC. 15, 1978 — RAIL STEEL DELETED
JAN. 8, 1981 — ADDED POST SIZE & SELECTION CHARTS; REVISED NOTES & DIMENSIONS
FEB. 3, 1986 — UPDATED TO 1986 SPECIFICATIONS

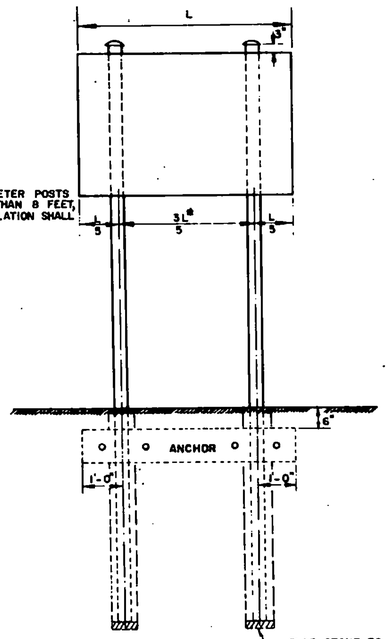
APPROVED
Nov 24. 1976
DATE
E. H. Stickney
CHIEF ENGINEER
R O Munn
ASST. CHIEF ENGINEER
Loren L Jones
HIGHWAY ENGINEER

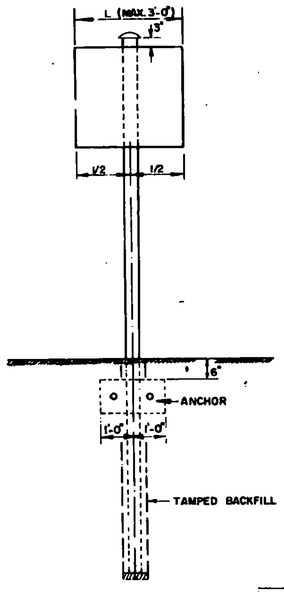
FLANGED CHANNEL STEEL SIGN SUPPORTS

VERMONT AGENCY OF TRANSPORTATION

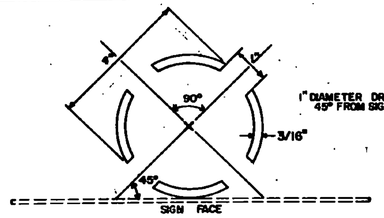
STANDARD
E-24.A



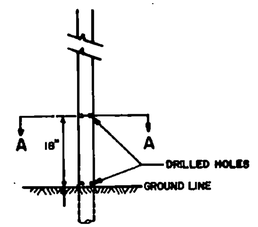




& WHEN USING 4" DIAMETER POSTS AND THIS DIMENSION IS LESS THAN 8 FEET, THE 4" DIAMETER POST INSTALLATION SHALL BE AS SHOWN IN DETAIL "A"

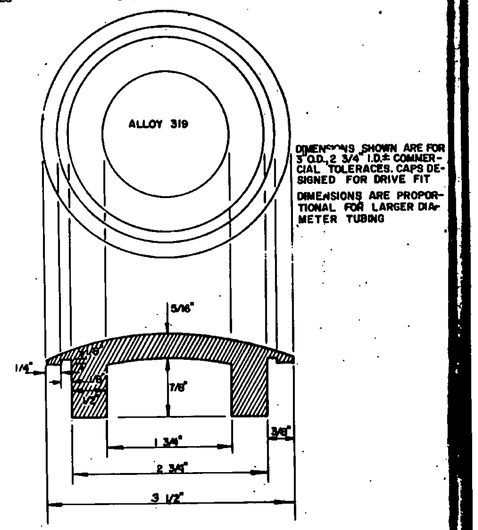


SECTION A-A



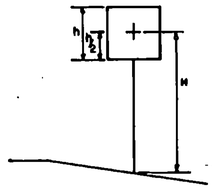
DETAIL A
4" DIAMETER POST
(MODIFIED)

CAST ALUMINUM CAP FOR SIGN POSTS



DIMENSIONS SHOWN ARE FOR 3" O.D., 2 3/4" I.D.± COMMERCIAL TOLERACES. CAPS DESIGNED FOR DRIVE FIT

DIMENSIONS ARE PROPORTIONAL FOR LARGER DIAMETER TUBING



POST DIAMETER	WALL THICKNESS	WEIGHT PER FT
3" Round	3/16"	1.9 lbs
4" Round	3/16"	2.6 lbs
3" Square	3/16"	2.5 lbs

TUBULAR ALUMINUM POST

POST SELECTION CHART		
SIGN AREA (FT.²) X H(FT.) ≤ Sv (SELECTION VALUE)		
POST SIZE	Sv (FT.³)	DESIGN CRITERIA
3" DIA.	225	WIND VELOCITY=60 MPH (10 YEAR
4" DIA. (MODIFIED)	276	MEAN RECURRANCE INTERVAL) WIND
		PRESSURE=12 PSF, ALUMINUM Fy=
3" SQUARE TUBE*	307	21,000 PSI, ALLOWABLE STRESS
4" DIA.	418	=1.4 (21,000) PSI

*USE ON SINGLE POST INSTALLATIONS ONLY

POSTS. THE POSTS FOR THESE INSTALLATIONS SHALL BE EXTRUDED TUBULAR POSTS OF ALUMINUM ALLOY 6061-T6

HARDWARE. THE ASSEMBLY HARDWARE USED TO FASTEN A SIGN TO THE POSTS SHALL BE ALUMINUM OR STAINLESS STEEL OF A STANDARD COMMERCIAL DESIGN APPROVED BY THE DEPARTMENT.

ANCHORS. USE TWO (2) PIECES OF 2" X 12" ROUGH PLANK WELL SEASONED, STRAIGHT AND SOUND SPRUCE OR OTHER APPROVED SPECIES, CUT FROM LIVE GROWING TIMBER; FREE FROM LOOSE KNOTS OR OTHER DEFECTS. PLANKS SHALL HAVE A PRESSURE PRESERVATIVE TREATMENT COVERED BY SECTION 720.01 OF THE SPECIFICATION FOR PLANK GUARD RAIL, SECTION 726.
THESE PLANKS SHALL BE CLAMPED POST TO POST WITH A MINIMUM OF ONE (1) FOOT OVERHANG; TO BE PARALLEL TO THE SIGN FACE.
THE TOP EDGE OF THE PLANKS SHALL BE APPROXIMATELY PARALLEL TO THE GROUND.
BOLTS FOR THE ANCHORS SHALL BE 3/8" CARRIAGE BOLTS WITH NUTS AND WASHERS AND SHALL BE GALVANIZED BY THE HOT-DIPPED PROCESS IN CONFORMANCE WITH A.S.T.M. SPECIFICATION A-153 AFTER FABRICATION, AND SHALL DEVELOP THE REQUIRED JOINT STRENGTH.

ERECTION. ALL POSTS SHALL BE PLUMB AND LOCATED AS SPECIFIED BY DRAWINGS OR BY THE ENGINEER IN THE FIELD. LOCK NUTS ON 3/8"-16 ALUMINUM POST BOLT CLIPS SHALL BE TORQUED TO 225 INCH POUNDS USING DRY, CLEAN, UNLUBRICATED THREADS.
WHERE ALUMINUM SURFACES ARE TO BE PLACED IN CONTACT WITH WOOD, THEY SHALL BE GIVEN A THICK COAT OF AN ALKALI-RESISTANT BITUMINOUS PAINT MEETING THE REQUIREMENTS OF MILITARY SPECIFICATION MIL-P-6883, WHICH SHALL BE DRY BEFORE INSTALLATION.

THE HOLE SHALL BE CAREFULLY DUG AND THE POST SET TO THE DEPTH SPECIFIED ABOVE. POSTS SHALL NOT BE DRIVEN. THE BACKFILL MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF GRANULAR BACKFILL FOR STRUCTURES OR SHALL BE MATERIAL APPROVED BY THE ENGINEER.

IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED POSTS WILL BE SET AND GROUTED 24" DEEP IN THE LEDGE UNLESS THE POSTS PENETRATE THE GROUND 4'.

REVISIONS AND CORRECTIONS

JAN 0, 1973 REVISED TO INCLUDE CHART FOR WEIGHT OF POST.
AUG. 21, 1978 - REMOVE 5" ALUMINUM TUBES PER FHWA REQUEST.
DEC. 15, 1978 - TAMPED BACKFILL NOTES ADDED.
JUNE 17, 1981 - ADDED 4" PIPE MOD. AND Sv CHART.
FEB. 3, 1986 - UPDATED TO 1986 SPECIFICATIONS

APPROVED DATE Dec. 29, 1971

R.N. Arnold
CHIEF ENGINEER

E.W. Stickney
ASST. CHIEF ENGINEER

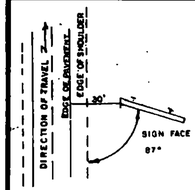
G. M. Lane
HIGHWAY ENGINEER

TUBULAR ALUMINUM SIGN SUPPORTS

VERMONT AGENCY OF TRANSPORTATION

STANDARD

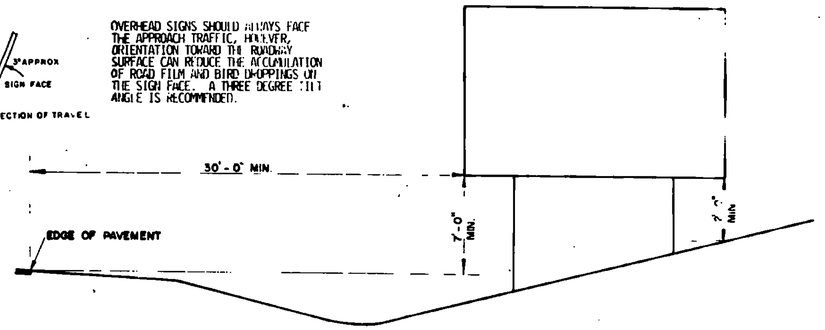
E-25

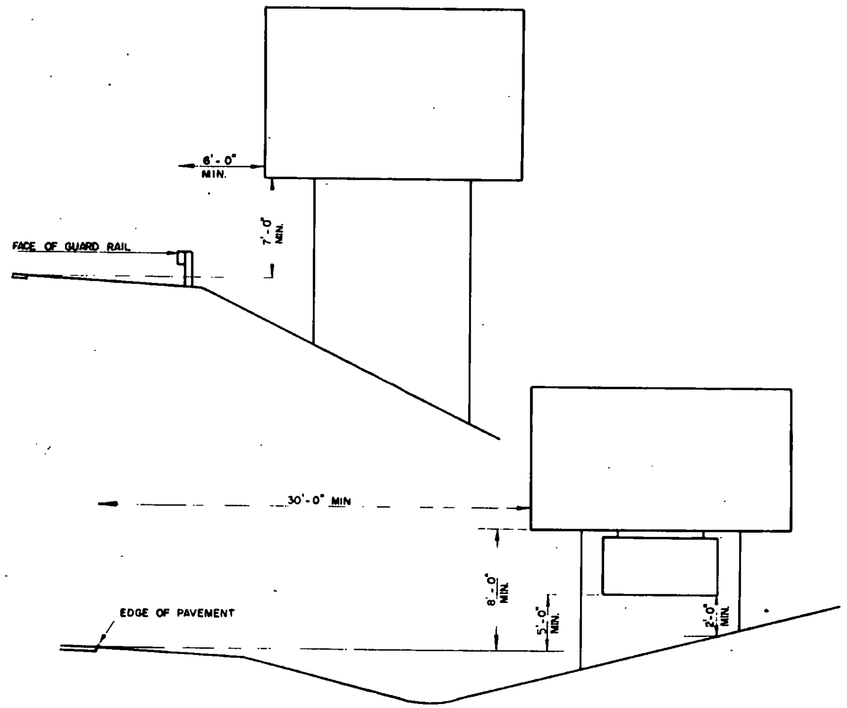


NORMALLY SIGNS SHOULD BE MOUNTED AT RIGHT ANGLES TO DIRECTION OF TRAFFIC. AT CURVED ALIGNMENTS THE ANGLE OF PLACEMENT SHOULD BE DETERMINED BY THE COURSE OF APPROACHING TRAFFIC RATHER THAN BY THE ROADSIDE EDGE AT THE POINT WHERE THE SIGN IS LOCATED.

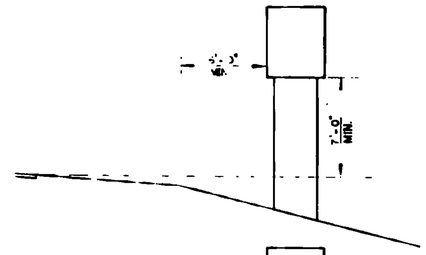
GUIDE SIGNS

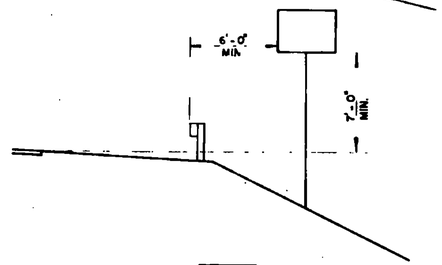
OVERHEAD SIGNS SHOULD ALWAYS FACE THE APPROACH TRAFFIC, HOWEVER, ORIENTATION TOWARD THE ROADWAY SURFACE CAN REDUCE THE ACCUMULATION OF ROAD FILM AND BIRD DROPPINGS ON THE SIGN FACE. A THREE DEGREE TILT ANGLE IS RECOMMENDED.

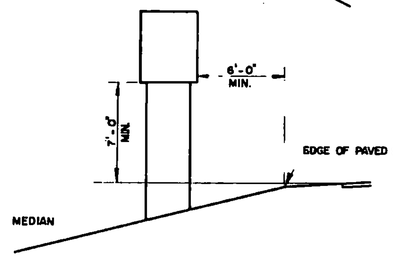




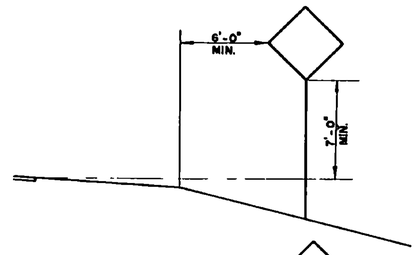
REGULATORY SIGNS



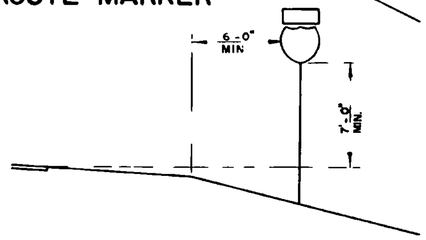




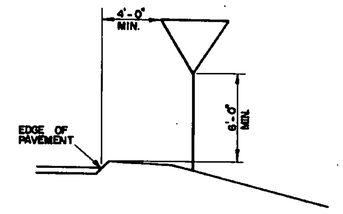
WARNING SIGNS

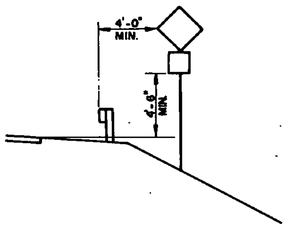


ROUTE MARKER

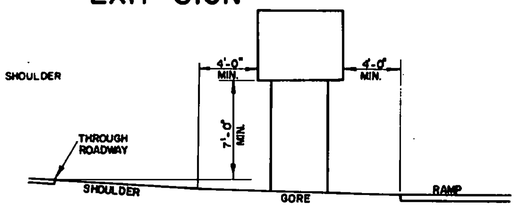


SIGNS ON RAMPS





EXIT SIGN



REVISIONS AND CORRECTIONS

DEC. 19, 1972 DIMENSION CHANGE
JAN 24 1983 SIGN INSTALLATION DETAILS ADDED
FEB. 3, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED:
Dec. 29, 1971
DATE

R H Crugnale
CHIEF ENGINEER
E H Stickney
ASST. CHIEF ENGINEER
G. M. Lane
HIGHWAY ENGINEER

TRAFFIC SIGNS

STANDARD SIGN PLACEMENT

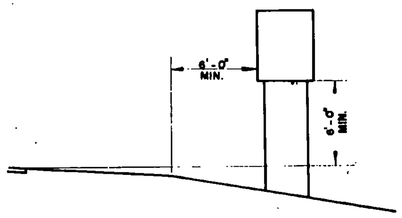
EXPRESSWAY TYPE

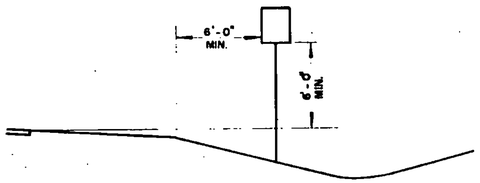
VERMONT AGENCY OF TRANSPORTATION

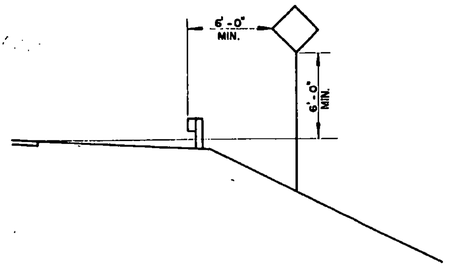
STANDARD

E-27

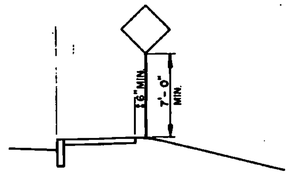
RURAL

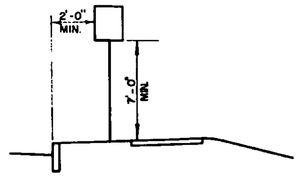


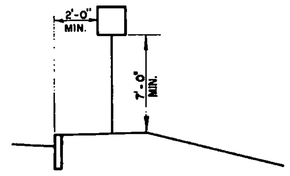




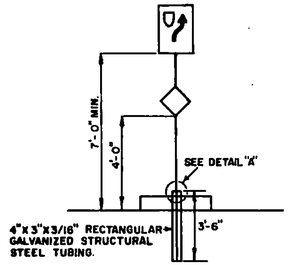
URBAN

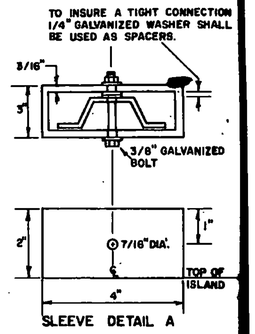




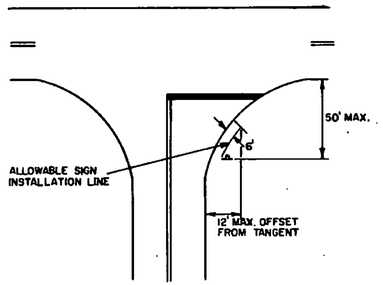


WARNING SIGNS
ON ISLAND IN THE LINE OF TRAFFIC





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

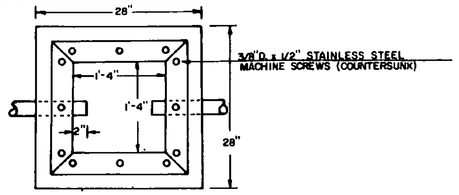
R.H. Crandell
CHIEF ENGINEER
E.H. Dickney
ASST. CHIEF ENGINEER
B.M. Lane
HIGHWAY ENGINEER

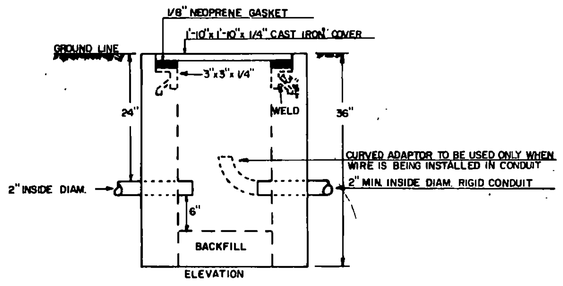
STANDARD SIGN PLACEMENT
CONVENTIONAL ROAD

VERMONT AGENCY OF TRANSPORTATION

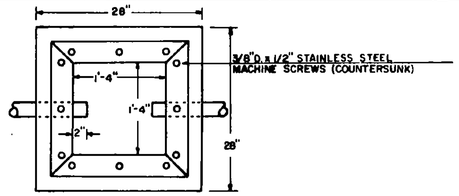
STANDARD

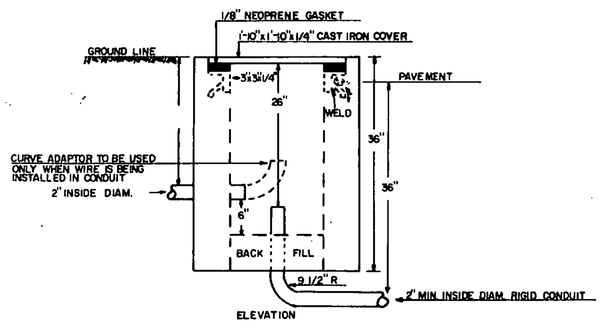
E-29



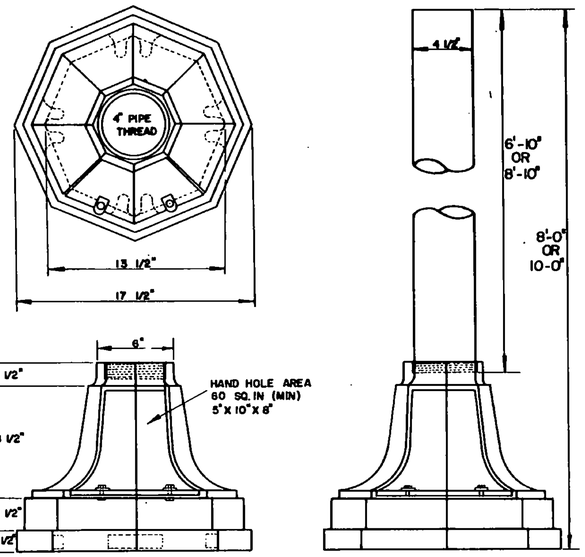


DETAILS OF PULL BOX TYPE -"A"

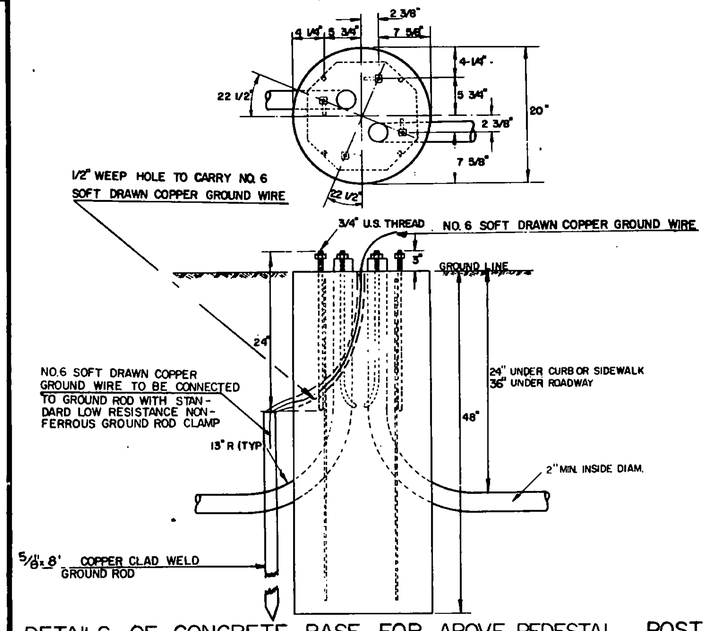




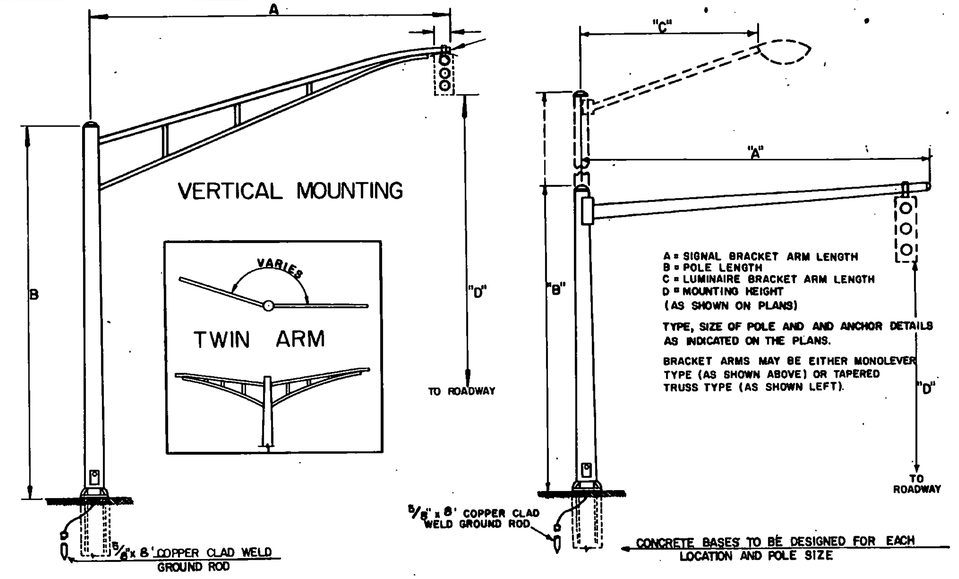
DETAILS OF PULL BOX TYPE-"B"



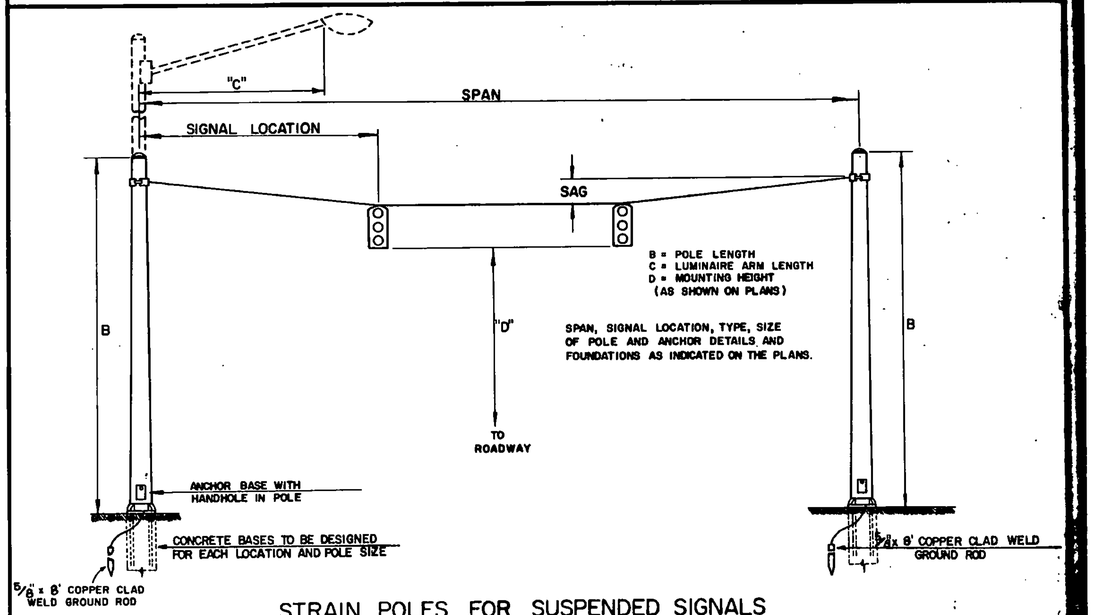
DETAILS OF TRAFFIC SIGNAL PEDESTAL POST & BASE



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.H. Stickney
ASST. CHIEF ENGINEER

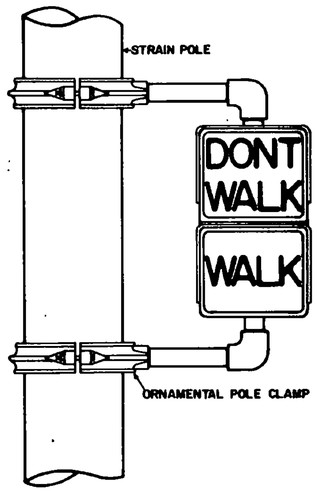
J.M. Law
HIGHWAY ENGINEER

TRAFFIC CONTROL SIGNALS

VERMONT AGENCY OF TRANSPORTATION

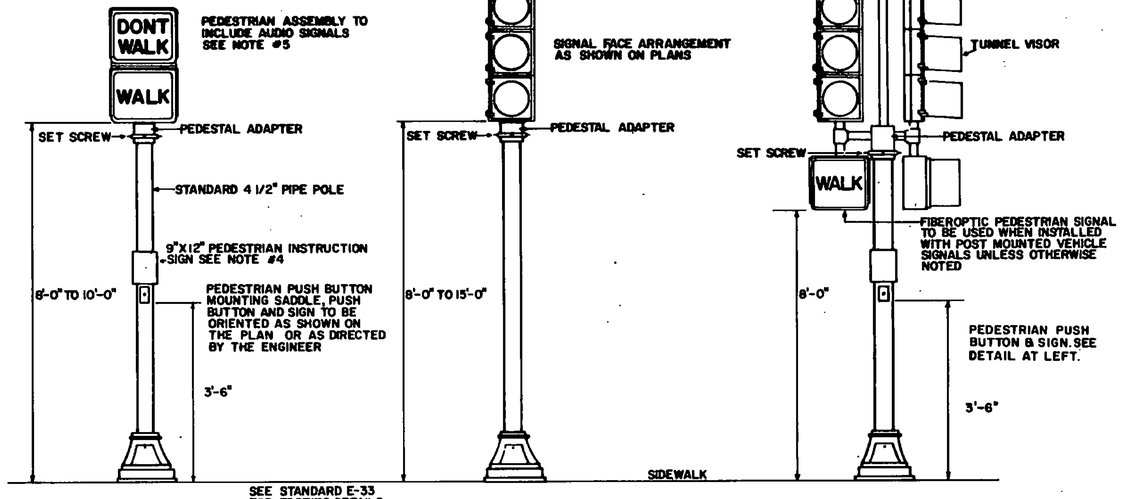
STANDARD

E-33

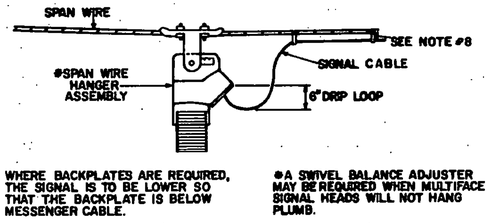


ASSEMBLY AS INDICATED ON PLANS-PEDESTRIAN HEAD DRAWN ONLY AS REFERENCE

POLE MOUNTING DETAIL



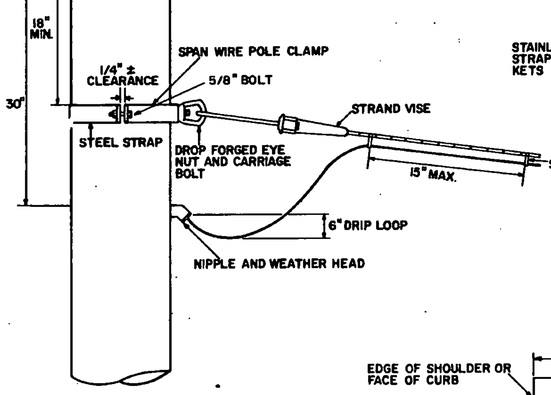
PEDESTAL POLE INSTALLATION



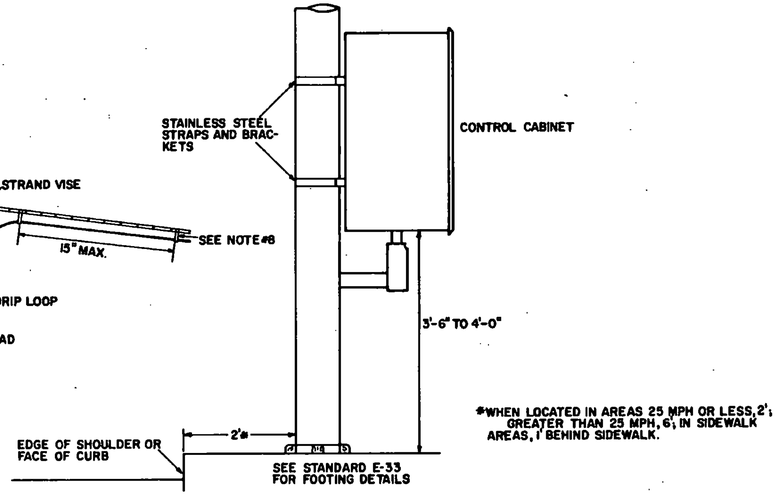
WHERE BACKPLATES ARE REQUIRED, THE SIGNAL IS TO BE LOWER SO THAT THE BACKPLATE IS BELOW MESSENGER CABLE.

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

SPAN WIRE MOUNTING TYPICAL



CABLE INSTALLATION TYPICAL WITH SPAN WIRE POLE CLAMP



*WHEN LOCATED IN AREAS 25 MPH OR LESS, 2'; GREATER THAN 25 MPH, 6', IN SIDEWALK AREAS, 1' BEHIND SIDEWALK.

POLE MOUNTED CONTROL CABINET TYPICAL

NOTES

1) Dimension "D" as shown on Standard E-33 shall not be less than 16'-6", unless otherwise stated.

2) For solid state equipment, the traffic signal equipment design and performance shall meet or exceed all requirements of the NEMA Standards for traffic control systems.

3) All electrical wire and cable shall be copper. Electrical signal cable from traffic signal controller to signal heads shall be composed of A.W.G. #12 stranded conductors.

4) Pedestrian push buttons should be mounted 3.5 feet above the sidewalk or ground with the "PUSH BUTTON FOR WALK SIGNAL" sign mounted immediately above or incorporated in the Push Button Unit. The unit shall include a pilot light which upon actuation, shall be illuminated until the "WALK" indication, steady or flashing, is displayed.

5) The pedestrian signal heads shall have audio signals to indicate allowable pedestrian movement for the visually impaired during the pedestrian phase. They shall be of the type normally used for such an installation and be wired in such a way as to be easily disconnected. The audio signal shall be a steady tone during the walk interval

The contractor shall submit the proposed system for review prior to installation.

6) Signal timing is approximate and is not to be considered final. All necessary hardware to change the timing shall be on hand when the lights are installed. The Resident Engineer shall perform checks during the AM and PM peak periods to insure optimum settings. If required, appropriate timing changes shall be made to "tune" the controller to its best efficiency prior to final inspection. Timing changes will be established by a representative of the VAOT Traffic Design Section, Timing adjustments shall be subsidiary to Item 678.15, Traffic Control Signals.

7) The traffic signal strain poles shall be back raked before the wires and signals are installed so that the poles will have a pleasing appearance when dead load deflection due to span wire and signal heads occurs. The amount of set back shall be as shown on the plans.

8) The stranded conductor signal cable shall be attached to the span wire by galvanized steel cable rings every 15 inches or attached to the span wire with stainless alloy .430 lashing (spanning) wire.

9) When street lights are installed on a traffic signal strain pole, the luminaires and mast arms are included under the Item 678.15, Traffic Control Signals. Particular attention should be given to Section 679 Street Lighting to ensure compliance with all the requirements of that section.

10) When pavement markings are included as contract items, the contractor shall be responsible for the maintenance of the pavement markings until the project is accepted. If the markings become discolored, faded or worn, they shall be replaced at no additional cost. Pavement markings shall be applied as soon as the roadway surface is completed. The signal system shall not operate without the appropriate pavement markings.

11) The signal heads shall be covered with an opaque covering until such time as the signal system is functional. At no time should the heads be viewed without having some form of signal indication i.e., flashing operation or sequencing as per plan.

12.) THE CONFLICT MONITOR SHALL BE CAPABLE OF DETECTING A LACK OF RED SIGNAL AS WELL AS THE GREEN, YELLOW & WALK SIGNALS.

13.) THE CABINET AMPLIFIERS & PHASE MODULES INSIDE THE CONTROLLER CABINET SHALL HAVE LABELS TO INDICATE WHICH MOVEMENT GOES WITH EACH. THE LABELS SHALL BE 1/2" WIDE PLASTIC SELF STICKING TAPE WITH RAISED LETTERS.

14.) PEDESTRIAN PUSH BUTTONS SHALL BE INSTALLED AT EACH END OF EACH CROSSWALK WHERE ACTUATED PEDESTRIAN SIGNALS ARE INSTALLED OR AS SHOWN ON THE PLANS.

15.) THE CONTRACTOR SHALL PROVIDE TWO COPIES OF THE INSTRUCTION MANUALS FOR THE CONTROLLER, LOOP DETECTORS, CONFLICT MONITORS AND ANY OTHER EQUIPMENT INCLUDED IN THE CABINET. ONE COPY IS TO BE KEPT IN THE CABINET AND THE OTHER GIVEN TO THE PARTY RESPONSIBLE FOR MAINTENANCE OF THE SIGNAL SYSTEM.

16.) FOR PROGRAMABLE SOLID STATE CONTROLLERS TWO COPIES OF THE FINAL PROGRAM LISTING SHALL BE PROVIDED AND DISTRIBUTED AS DETAILED IN NOTE 15.

17.) PHASING CHANGES, IF REQUESTED AND FEASIBLE, SHALL BE CONSIDERED AS PART OF THE CONTRACT. EXTRA COMPENSATION FOR THE CHANGES WILL BE AUTHORIZED FOLLOWING APPROVAL OF THE ESTIMATE.

REVISIONS AND CORRECTIONS

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

APPROVED: JULY 31, 1981
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

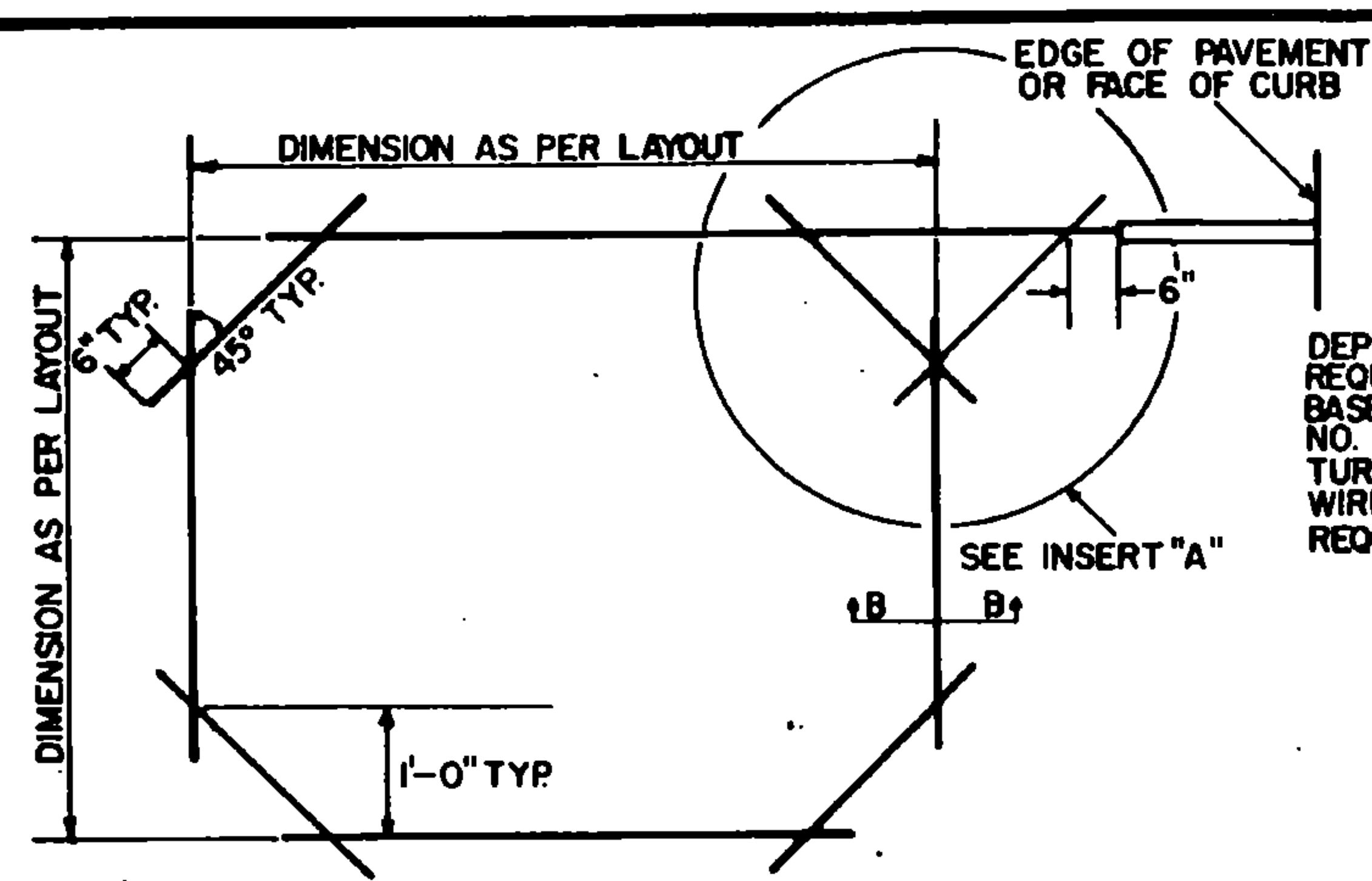
CHIEF OF DESIGN

TRANSPORTATION DESIGN ENGINEER

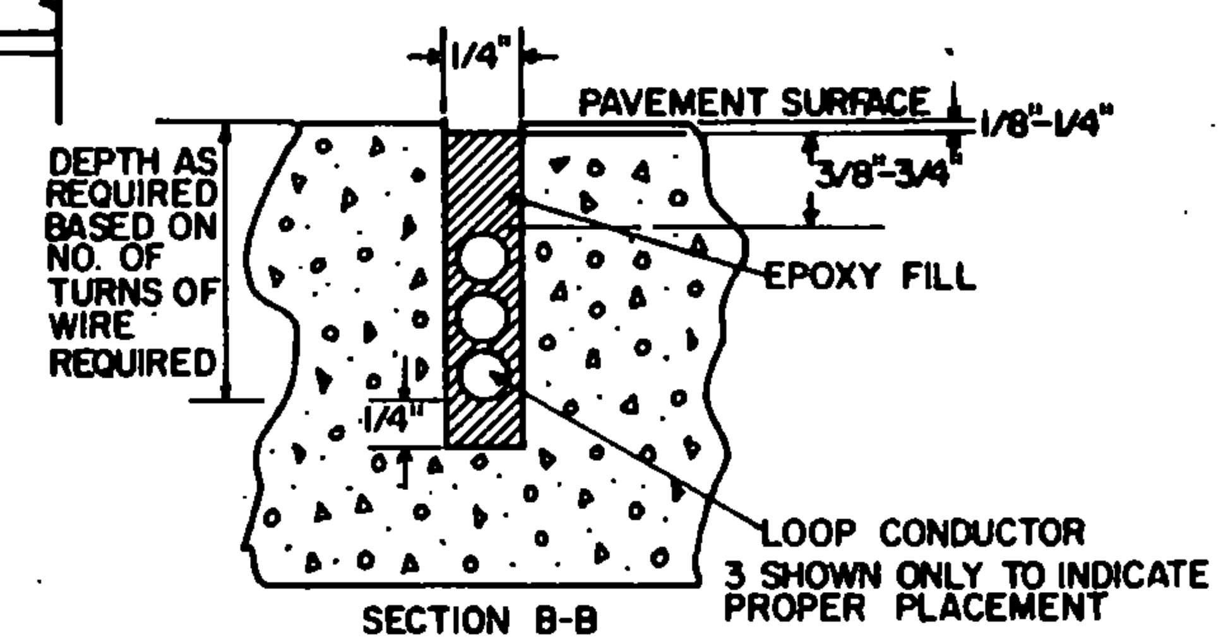
TRAFFIC SIGNAL ITEM DETAILS

VERMONT AGENCY OF TRANSPORTATION

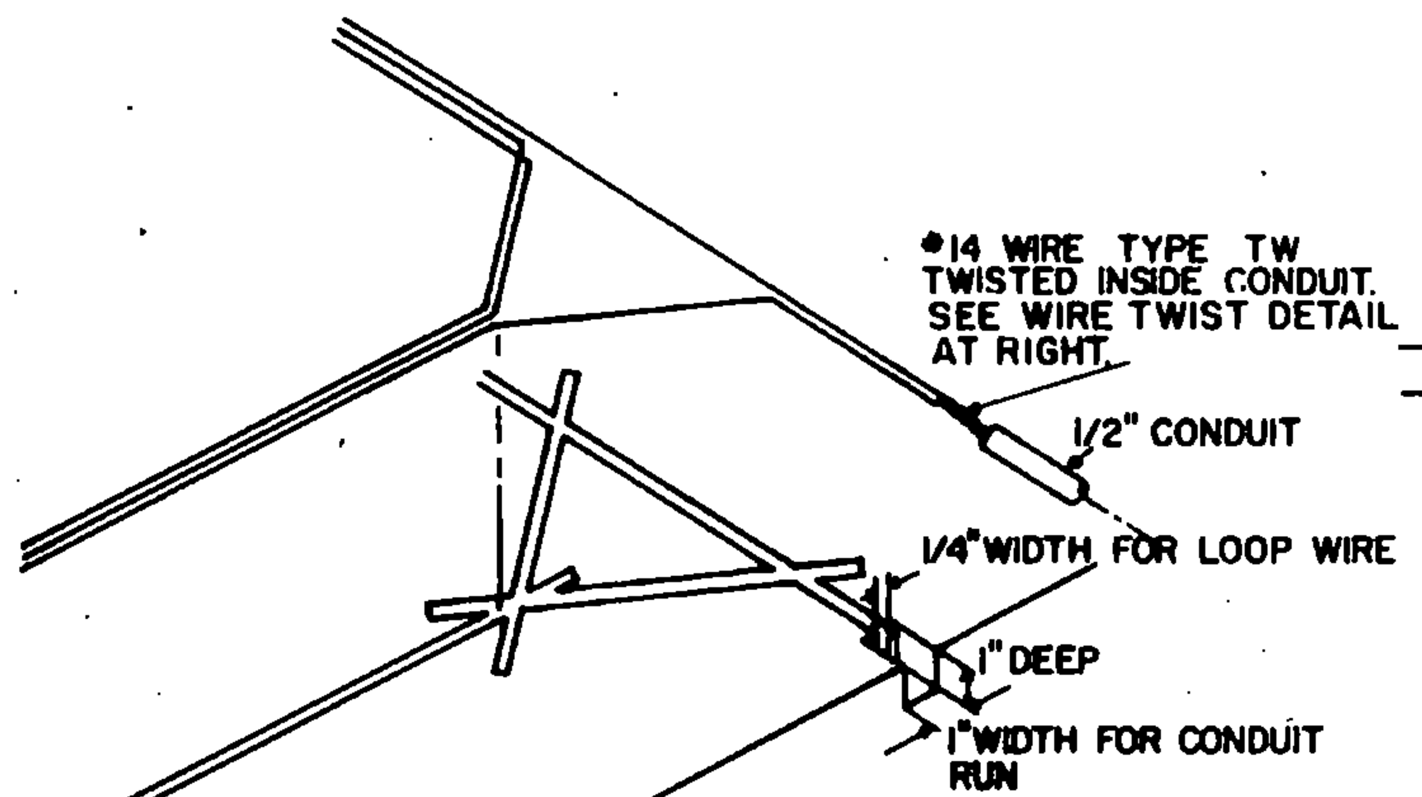
STANDARD
E-34



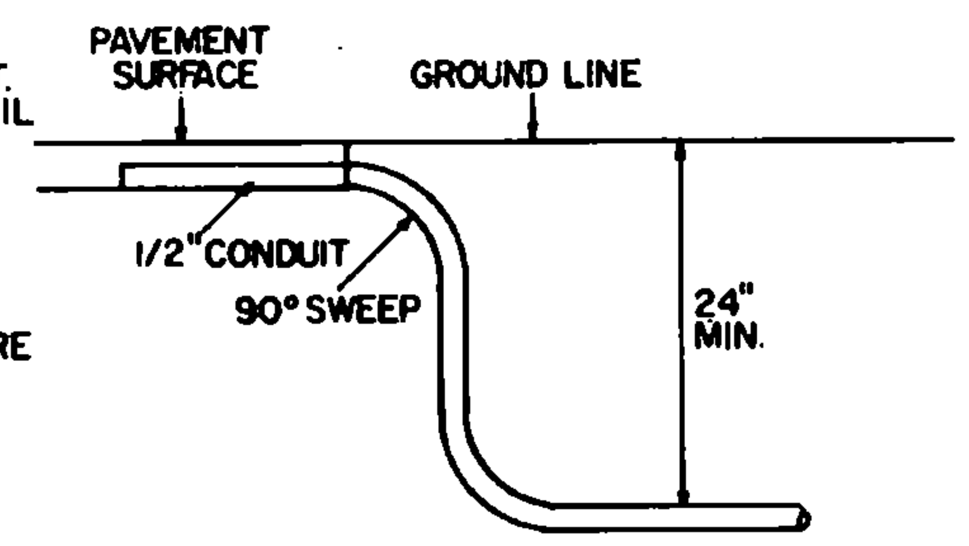
VEHICLE DETECTOR LOOP LAYOUT DETAIL



LOOP SLOT DETAIL



INSERT "A"



CONDUIT DETAIL FOR LOOP LEAD-IN TO CONTROLLER/PULL BOX

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

RECTANGULAR LOOPS
VEHICLE DETECTOR LOOP INDUCTANCE DESIGN TABLE

SHORTER DIMENSION OF LOOP: 6 FEET – LARGER LOOP DIM. (FT.)	6 FEET – AREA (SQ.FT.)	8 FEET – LARGER LOOP DIM. (FT.)	8 FEET – AREA (SQ.FT.)	10 FEET – LARGER LOOP DIM. (FT.)	10 FEET – AREA (SQ.FT.)	12 FEET – LARGER LOOP DIM. (FT.)	12 FEET – AREA (SQ.FT.)	LOOP PERIMETER (FT.)	LOOP INDUCTANCE (MICROHENRIES) 1 TURNS K=.45	2 TURNS K=.42	3 TURNS K=.38	4 TURNS K=.36
6	36	—	—	—	—	—	—	24	11	40	82	138
8	48	—	—	—	—	—	—	28	13	47	96	161
10	60	8	64	—	—	—	—	32	14	54	109	184
12	72	10	80	—	—	—	—	36	16	60	123	207
14	84	12	96	10	100	—	—	40	18	67	137	230
16	96	14	112	12	120	—	—	44	20	74	151	254
18	108	16	128	14	140	12	144	48	22	81	164	277
20	120	18	144	16	160	14	168	52	23	87	178	300
22	132	20	160	18	180	16	192	56	25	94	192	323
24	144	22	176	20	200	18	216	60	27	101	205	346
26	156	24	192	22	220	20	240	64	29	108	219	369
28	168	26	208	24	240	22	264	68	31	114	232	392
30	180	28	224	26	260	24	288	72	32	121	246	415
32	192	30	240	28	280	26	312	76	34	128	260	438
35	210	33	264	31	310	29	348	82	37	138	280	472
40	240	38	304	36	360	34	408	92	41	155	315	530
45	270	43	344	41	410	39	468	102	46	172	349	588
50	300	48	384	46	460	44	528	112	50	188	383	—
55	330	53	424	51	510	49	588	122	55	205	417	—
60	360	58	464	56	560	—	—	132	59	222	451	—
70	420	68	544	—	—	—	—	152	68	256	520	—
80	480	—	—	—	—	—	—	172	77	289	588	—
90	540	—	—	—	—	—	—	192	86	323	—	—
100	600	—	—	—	—	—	—	212	95	356	—	—

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

2: THE INDUCTANCE FORMULA USED FOR THE TABLE ABOVE IS $L = KPN^2$, WHERE $K = \frac{5}{10+N}$. THIS IS THE MARYLAND-ILLINOIS FORMULA FROM A REPORT ON VEHICLE DETECTORS, BY KLATT (1973)

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

DESIGN VALUES

AVAILABLE CONDUIT AREA – SIZE	* 26% FILL (IN^2)
1"	0.23
1 1/4"	0.39
1 1/2"	0.53
2"	0.87
2 1/2"	1.24
3"	1.92
3 1/2"	2.57

CONDUCTOR SIZE TABLE – TYPE	X-SECTION AREA (IN^2)
#14	0.020
#12	0.025
#10	0.031
#8	0.060
#6	0.082

*1978 NATIONAL ELECTRICAL CODES INDICATES 40 % FILL

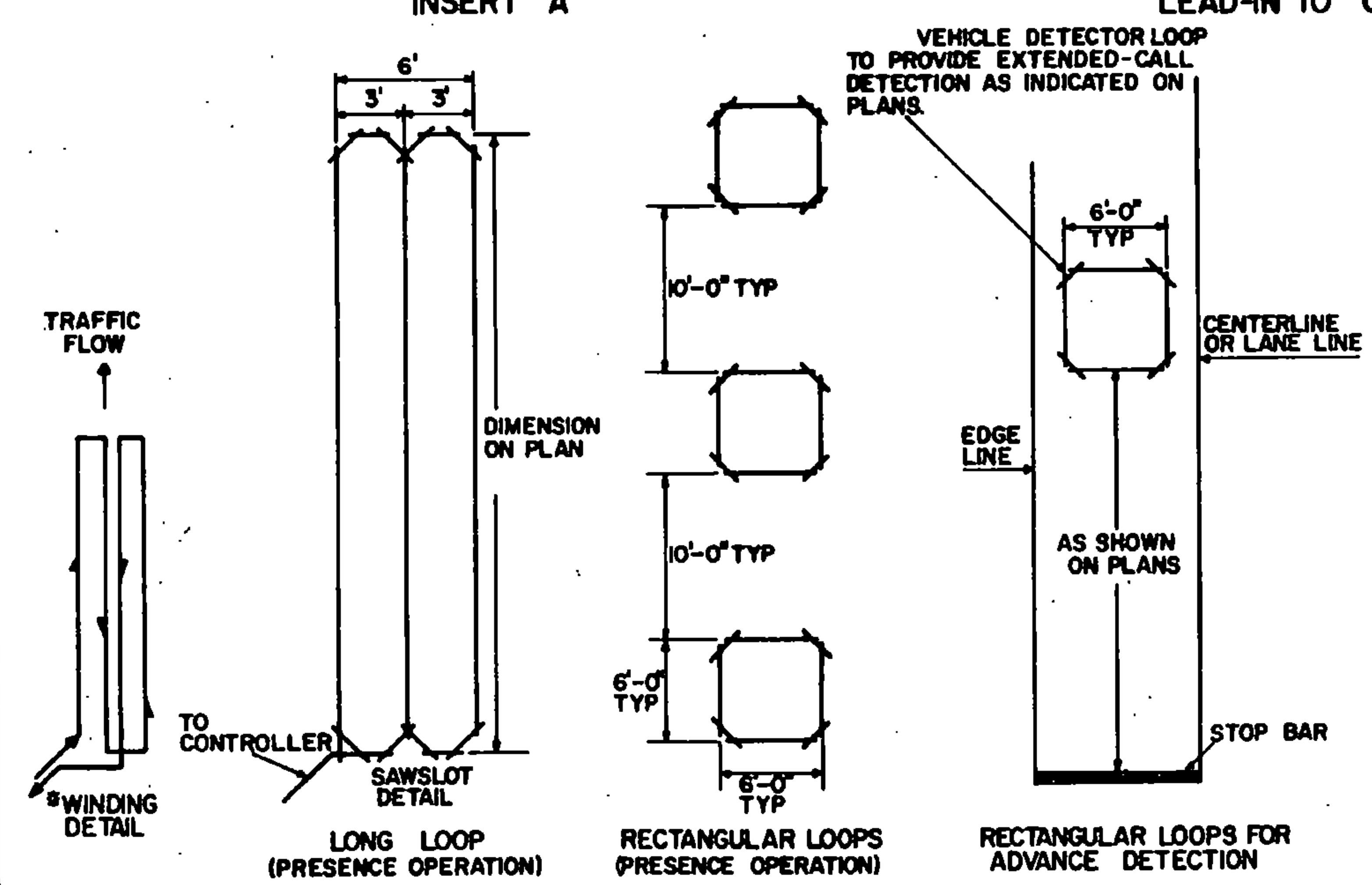
VEHICLE DETECTOR LOOP NOTES

1) THE TERM "VEHICLE DETECTOR LOOP" SHALL REFER TO THE SENSOR ELEMENT IMBEDDED IN THE PAVEMENT WHICH SENSES VEHICLE PASSAGE OR PRESENCE. THE TERM "CABINET AMPLIFIER" SHALL REFER TO THE ELECTRICAL OR ELECTRONIC DEVICE LOCATED IN THE CONTROL CABINET WHICH RESPONDS DIRECTLY TO A VEHICLE ACTUATION AND INTERFACES WITH THE CONTROLLER.

2) WHEN THE DISTANCE FROM THE VEHICLE DETECTOR LOOP TO THE CONTROLLER EXCEEDS 250 FEET, 12 AWG WIRE SHALL BE USED FOR THE FEEDER WIRE. BELDEN SHIELDED CABLE SHALL BE USED TO EXTEND LOOP LEAD-INS TO THE CONTROLLER CABINET.

3) THE VEHICLE DETECTOR LOOPS SHALL BE INSTALLED IN SUCH A WAY AS TO MAXIMIZE SENSITIVITY AND SHALL BE CAPABLE OF DETECTING MOTORCYCLES AND BICYCLES. WHILE ELIMANATING, FALSE CALLS FROM VEHICLES IN ADJACENT LANES. LOOPS ARE DESIGNED SO THAT THE LOOPS AND FEEDER LINES TOTAL INDUCTANCE THAT EXISTS AT THE AMPLIFIER IS AT THE CENTER OF RANGE WITH REGARD TO INDUCTANCE (DESIGN VALUE OF 350 MICROHENRIES, ASSUMED). INDUCTANCE AND CAPACITANCE MEASUREMENTS SHALL BE TAKEN AND RECORDED PRIOR TO AND AFTER THE SAW SLOTS ARE SEALED.

4.) THE LOOPS ARE CENTERED IN THEIR RESPECTIVE LANE, UNLESS OTHERWISE NOTED.



*TWO TURNS REQUIRED UNLESS OTHERWISE NOTED.

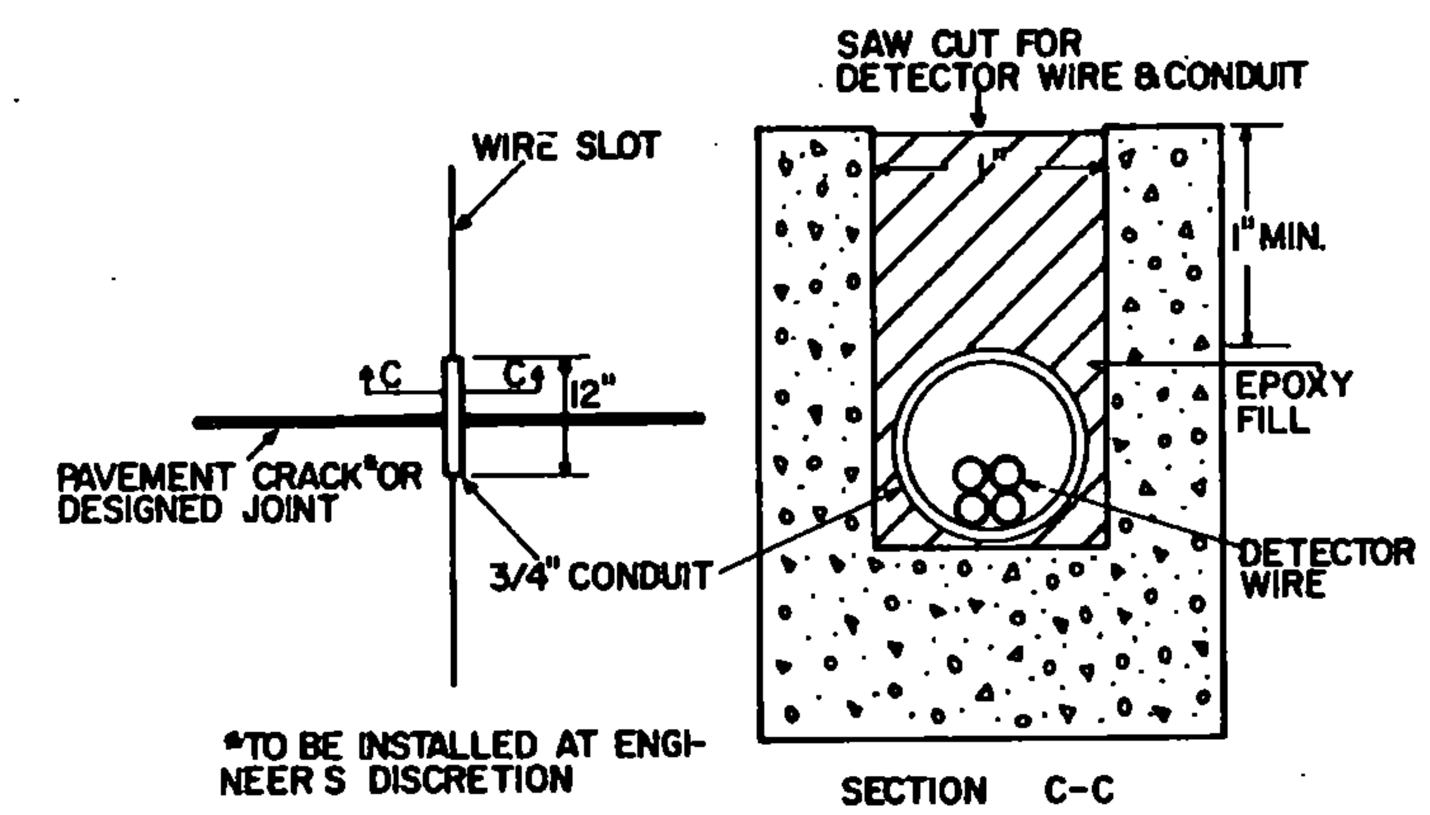
TYPICAL LOOP DESIGNS

LONG LOOPS
VEHICLE DETECTOR LOOP INDUCTANCE DESIGN TABLE

LOOP INDUCTANCE (MICROHENRIES)

LARGER LOOP DIMENSION	SHORTER LOOP DIMENSION: 4 FEET 1 TURN	4 FEET 2 TURNS	6 FEET 1 TURN	6 FEET 2 TURNS	8 FEET 1 TURN	8 FEET 2 TURNS
10	29	92	31	98	33	104
15	41	132	43	138	45	144
20	54	172	56	178	58	184
22	59	188	61	194	63	200
24	64	204	66	210	68	216
26	69	220	71	226	73	232
28	74	236	76	242	78	248
30	79	252	81	258	83	264
32	84	268	86	274	88	280
35	91	292	93	298	95	304
40	104	332	106	338	108	344
45	116	372	118	378	120	384
50	129	412	131	418	133	424
55	141	452	143	458	145	464
60	154	492	156	498	158	504
65	166	532	168	538	170	544
70	179	572	181	578	183	584
80	204	-	206	-	208	-
90	229	-	231	-	233	-
100	254	-	256	-	258	-

NOTE: 1. SAME AS # 1 FOR RECTANGULAR LOOPS.
2. THE ABOVE INDUCTANCES ARE ESTIMATED QUANTITIES USING THE FOLLOWING EQUATIONS.
1 TURN = (PERIMETER X 0.5) + (LARGER DIMENSION X 1.5)
2 TURN = (PERIMETER X 1.5) + (LARGER DIMENSION X 5.0)
3. SAME AS # 3 FOR RECTANGULAR LOOPS.



*TO BE INSTALLED AT ENGINEER'S DISCRETION

DETECTOR WIRE ACROSS JOINTS OR CRACKS

INSTALLATION NOTES

1.) NO WIRE SPLICING EXCEPT IN PULL BOXES. SPLICES SHALL BE SOLDERED (ROSIN CORE) AND WRAPPED WITH PLASTIC TAPE AND COATED WITH A SEALANT USED FOR SUCH PURPOSES.

2.) BEFORE LAYING IN THE LOOP WIRE, A ONE-QUARTER INCH OF SEALANT SHALL BE PLACED IN THE SAW SLOT AND ALLOWED TO SET UP SUFFICIENTLY TO GIVE THE WIRE SOME SUPPORT. EACH WIRE SHALL BE PLACED IN THE SAW SLOT WITH A BLUNT WOODEN STICK AND SEALED BEFORE PLACING THE NEXT WIRE ON TOP UNTIL THE REQUIRED NUMBER OF TURNS IS COMPLETE.

3.) VEHICLE DETECTOR LOOPS SHALL NOT BE PLACED ON THE BASE COURSE AND PAVED OVER. SAW-CUTS SHALL BE MADE IN THE FINAL PAVEMENT COURSE AND THE LOOPS INSTALLED IN THEM.

4.) LOOP LEAD-INS FROM ADJACENT LOOPS SHALL BE IN SEPARATE SAWSLOTS TO THE CURB PULL BOX.

5.) LOOP FEEDERS SHALL BE AT LEAST ONE FOOT AWAY FROM POWER WIRING.

REVISIONS AND CORRECTIONS

DATE: 10/21/81 LONG LOOP INDUCTANCE TABLE ADDED.
8/23/82 NOTES 4&5 ADDED
FEB. 3, 1986 – UPDATED TO 1986 SPECIFICATIONS

APPROVED: JULY 28, 1981
DATE

DIRECTOR OF ENGINEERING AND CONSTRUCTION

CHIEF OF DESIGN

TRANSPORTATION DESIGN ENGINEER

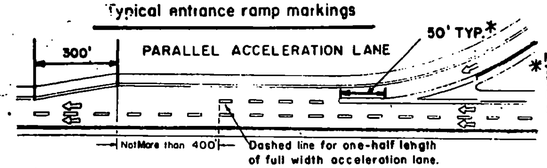
VEHICLE DETECTOR LOOP DETAILS

VERMONT AGENCY OF TRANSPORTATION

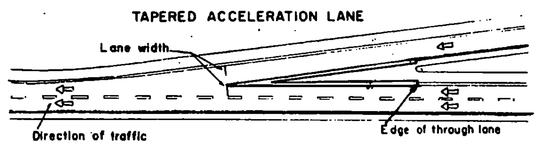
STANDARD

E-36

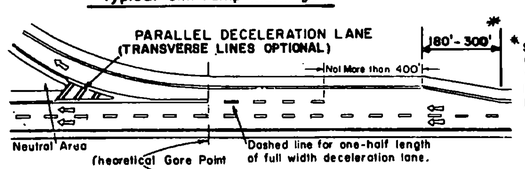
Typical entrance ramp markings



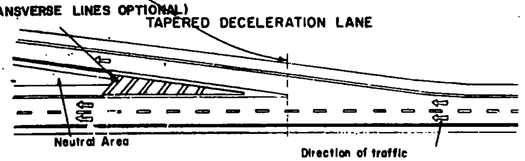
* MAY BE MADE LONGER TO EMPHASIZE SITUATIONS WHERE THE CROSSING REQUIRES UNUSAL CARE SUCH AS HIGH VOLUME MERGE AREAS.



Typical exit ramp markings

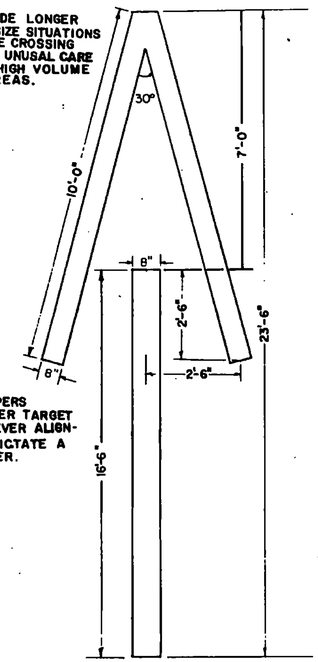


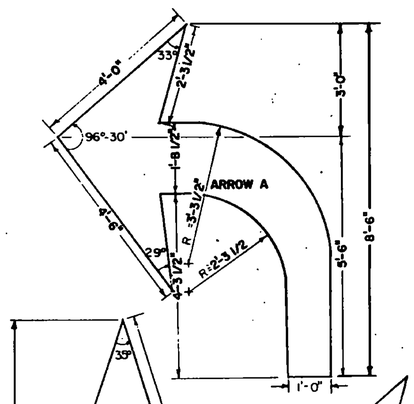
* SHORTER TAPERS GIVE A BETTER TARGET VALUE, HOWEVER ALIGNMENT MAY DICTATE A LONGER TAPER.

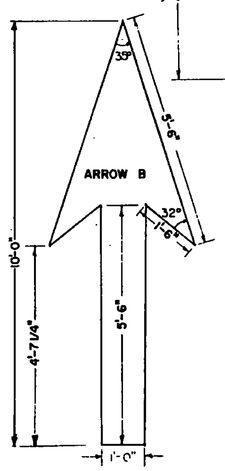


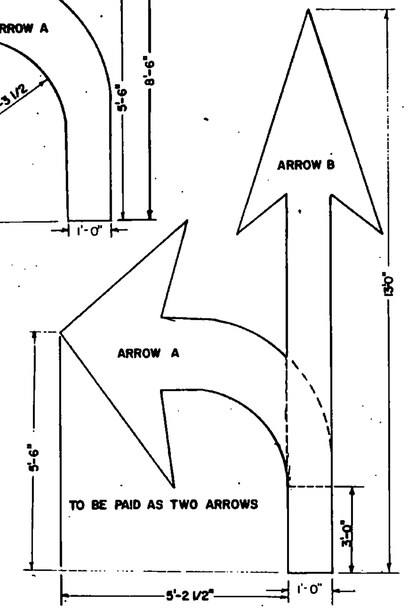
TRANSVERSE LINES SHALL CONSIST OF 8" WHITE LINES SPACED 5'-0" C-C AND SET AT 45° TO MAIN LINE EDGE LINES. THESE MARKINGS SHALL BE USED TO INCREASE VISIBILITY DUE TO DIFFICULT VERTICAL OR HORIZONTAL ALIGNMENT.

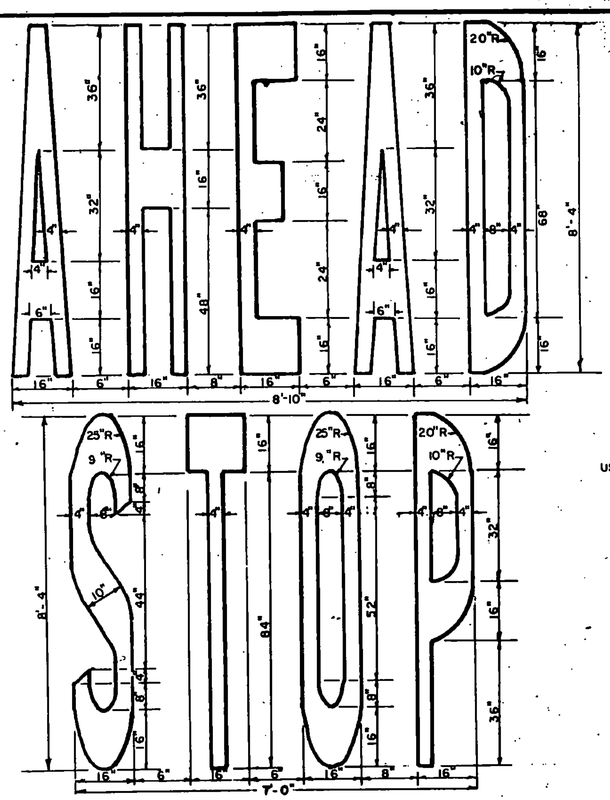
RAMP PAVEMENT ARROW DETAIL





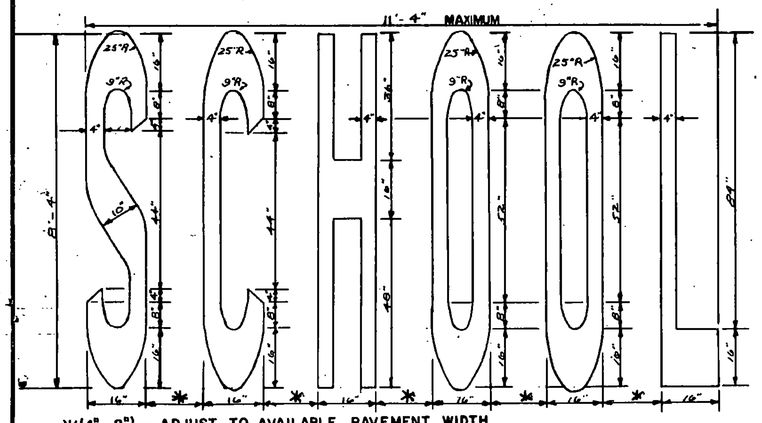




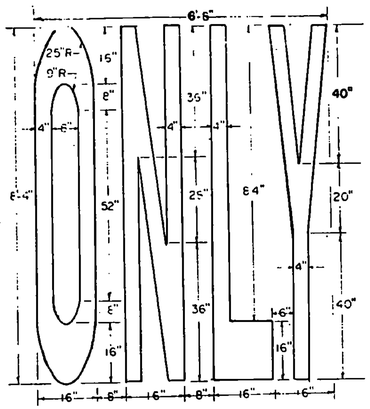


16" SIGN 16"

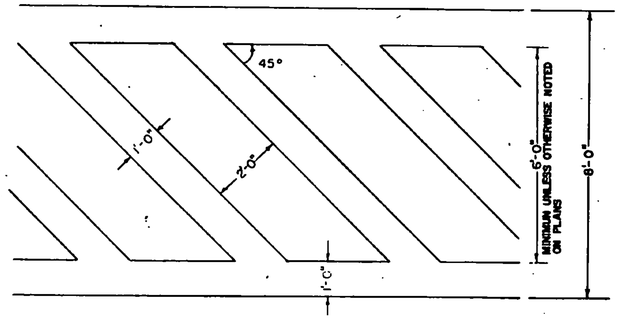
32' SPACING BETWEEN WORDS USE FOR "STOP AHEAD" "SIGNAL AHEAD" "YIELD AHEAD"



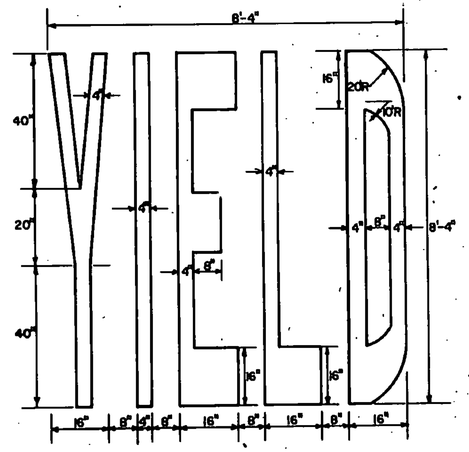
*(4"- 8")— ADJUST TO AVAILABLE PAVEMENT WIDTH



CROSSWALK DETAIL



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



REVISIONS AND CORRECTIONS

MAR. 16, 1982 YIELD ADDED.
SEPT. 20, 1985 REVISED GORE MARKINGS & "SCHOOL" SPACING
FEB. 3, 1986 — UPDATED TO 1986 SPECIFICATIONS

APPROVED: AUGUST 4, 1981 DATE

S. J. Page
DIRECTOR OF ENGINEERING AND CONSTRUCTION

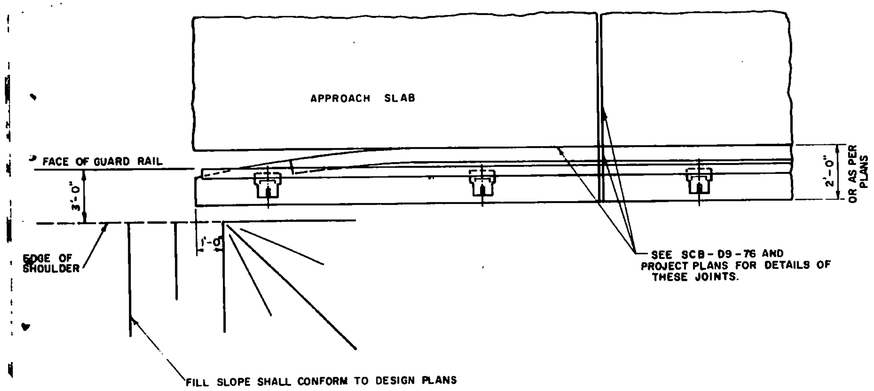
CHIEF OF DESIGN

TRANSPORTATION DESIGN ENGINEER

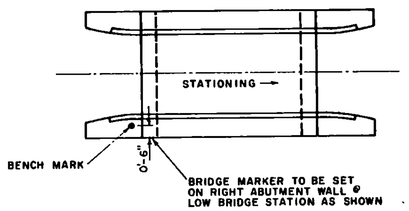
PAVEMENT MARKING DETAILS

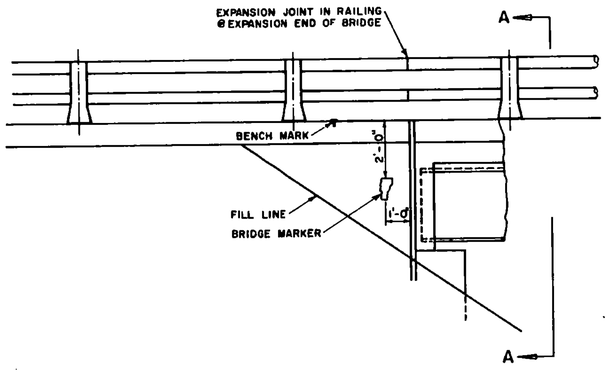
STANDARD

E-50

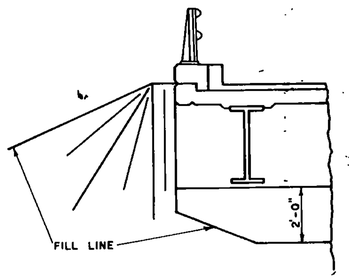


PLAN AT ABUTMENT





ELEVATION AT ABUTMENT



SECTION A-A

GENERAL NOTES

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, DEPARTMENT OF HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, DATED MARCH 1976 AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 1977 AND ITS LATEST REVISIONS. DESIGN IS FOR HS-20-44 LOADING MODIFIED FOR THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS, APPLIED IN ACCORDANCE WITH THE PROVISIONS OF AASHTO STANDARD SPECIFICATIONS.

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

1. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM DESIGNATION A-588 (UNPAINTED). ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" ø ASTM A-325, TYPE III BOLTS IN 15/16" ø HOLES, WHERE CONNECTIONS ARE NOT DETAILED ON THE PLANS THEY SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STATE FOR APPROVAL.

2. WHEN NOT DETAILED ON THE PLANS, SIMPLE SPAN BEAMS SHALL BE CAMBERED FOR THE DEAD LOAD DEFLECTION PLUS ONE-EIGHTH (1/8) INCH FOR EACH TEN FEET OF SPAN OR FRACTION THEREOF. THE CAMBER SHALL APPROXIMATE A SIMPLE CIRCULAR CURVE FROM END TO END OF BEAM. TOLERANCES IN CAMBER SHALL BE AS INDICATED IN THE A.I.S.C. HANDBOOK FOR ROLLED BEAMS AND AS INDICATED IN THE AWS SPECIFICATION FOR WELDED GIRDERS.

3. ALL WELDING AND DIMENSIONAL TOLERANCES OF WELDED MEMBERS SHALL CONFORM TO AWS D1.1-80 "STRUCTURAL WELDING CODE" AND ITS LATEST REVISIONS EXCEPT AS MODIFIED BY THE AASHTO STANDARD SPECIFICATIONS FOR WELDING OF STRUCTURAL STEEL HIGHWAY BRIDGES, DATED 1981 AND ITS LATEST REVISIONS.

4. ALLOWABLE DESIGN STRESSES: *

CONCRETE:	CLASS A	f'c	3,500 psi	fc	1400 psi
	CLASS B	f'c	3,500 psi	fc	1400 psi
STRUCTURAL STEEL:	A-588 MAX. DESIGN STRESS - 27,000 psi (or as per AASHTO Specs.)				
REINFORCING STEEL:		GRADE 40		GRADE 60	
	DESIGN STRESS (TENSION)	20,000 psi		24,000 psi	
	DESIGN STRESS (COMPRESSION)	16,000 psi		20,000 psi	

5. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF ERECTED BEAMS SHALL BE TAKEN UNDER THE DIRECTION OF THE ENGINEER FOR USE IN DETERMINING THE FINAL GRADE.

6. MINIMUM COVER FOR REINFORCING STEEL (EXCEPT IN DECKS) SHALL BE 2" IN BACK FACES OF WALLS AGAINST EARTH AND 3" ELSEWHERE.

7. ALL EXPOSED EDGES OF CONCRETE IN THE SUBSTRUCTURE AND SUPERSTRUCTURE SHALL BE CHAMFERED 1" x 1".

8. DECK CONCRETE SHALL BE CONCRETE CLASS A. ALL OTHER CONCRETE SHALL BE CONCRETE CLASS B.

9. BRIDGE SEATS OF ALL PIERS AND ABUTMENTS SHALL BE SLOPED 1/2" PER FOOT EXCEPT UNDER BEARING PLATES WHERE THE SURFACES SHALL BE LEVEL. ABUTMENTS SHALL BE SLOPED FULL WIDTH, PIERS SHALL BE SLOPED EACH WAY FROM CENTER. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED

10. ABUTMENT CONCRETE ABOVE THE ADJACENT BRIDGE SEAT ELEVATIONS SHALL PREFERABLY NOT BE PLACED UNTIL FINAL FINISHED GRADE OF DECK IS ESTABLISHED BY THE ENGINEER

11. ANY FORM BRACKET HOLES IN FASCIA BEAMS OR GIRDER WEBS SHALL BE FILLED WITH BUTTON-HEAD OR HEX-HEAD BOLTS (TYPE III ON A-588 STEEL).

12. GRANULAR BORROW USED IN AREAS THROUGH WHICH PILES ARE TO BE DRIVEN SHALL HAVE A MAXIMUM STONE SIZE OF NINE INCHES.

13. BORINGS INDICATED ON THE DRAWINGS HAVE BEEN MADE FOR DESIGN PURPOSES ONLY AND DO NOT WARRANT ACTUAL SUB-SURFACE CONDITIONS.

14. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68° F.

* NOTE: SPECIFICATIONS CALL FOR A CLASS A CONCRETE WHICH WILL PRODUCE 4000 PSI AT 28 DAYS. HOWEVER, SUPERSTRUCTURE CONCRETE IS DESIGNED ON THE BASIS OF f'c = 3500 THUS PROVIDING AN ADDITIONAL FACTOR OF SAFETY IN BRIDGE SLABS.

15. IF ALL DECK CONCRETE IS NOT PLACED IN ONE WORKING DAY, A MINIMUM DELAY PERIOD OF 96 HOURS (FOLLOWING END OF PLACEMENT OF THE PREVIOUS CONCRETE) WILL BE REQUIRED BEFORE PLACING ADDITIONAL CONCRETE. THE MINIMUM DELAY PERIOD SHALL BE INCREASED WHEN SO ORDERED BY THE ENGINEER. IN ALL CASES THE PLACEMENT SEQUENCE INDICATED ON THE PLANS SHALL BE FOLLOWED.

16. REINFORCING PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:
SPACING TOLERANCE: ± 1"
CLEARANCE TOLERANCE: ± 1/4"

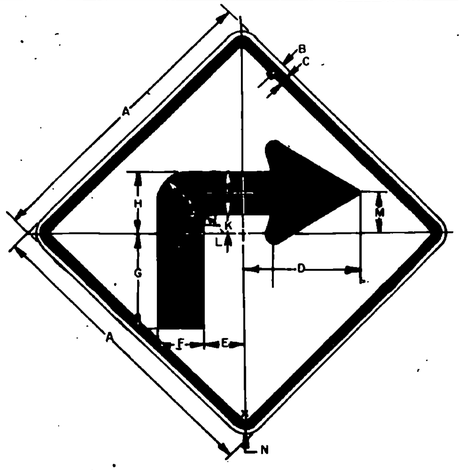
REVISIONS AND CORRECTIONS
1- Added word seat in line 3 of Note #9 J.WOOD 4-23-75
2. CHANGED VERMONT SPEC. DATE, GEN. NOTE, AND ADDED NOTE NO. 15, W. TRIPP 4-26-76.
3. REVISED NOTES, W. TRIPP, 12-15-76.
4. REVISED DATES, NOTE NO. 3. W. TRIPP 4-25-77
5. REVISED NOTES W. TRIPP 4-3-78
6. REVISED NOTE NO.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

APPROVED
JAN. 30 1985 DATE
H. [illegible] CHIEF ENGINEER
K O Mann ASST. CHIEF ENGINEER
K M Smith BRIDGE ENGINEER

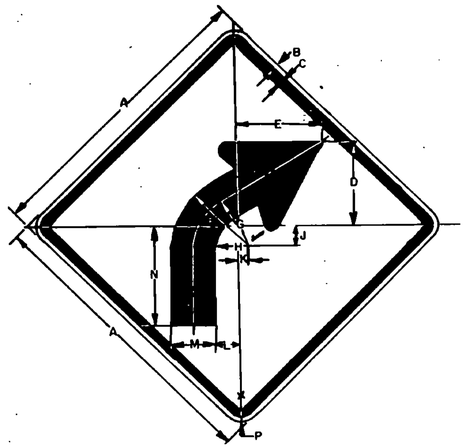
DETAILS OF W BEAM BRIDGES GENERAL INFORMATION AND GENERAL NOTES

VERMONT DEPARTMENT OF HIGHWAYS STANDARD

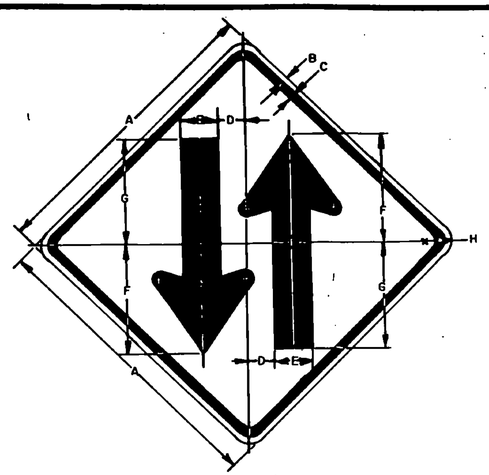
SCB-01-75



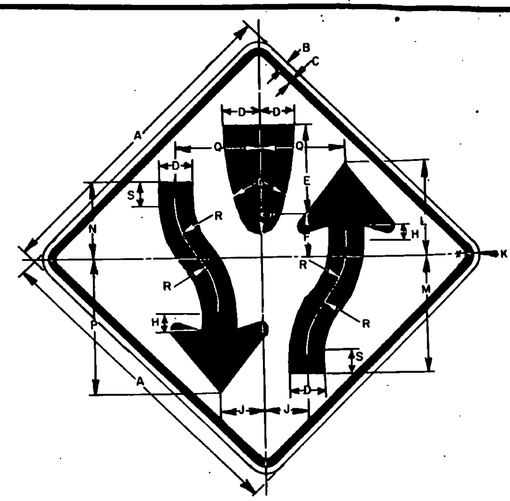
SIGN	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
BIKE	18	3/8	5/8	7-1/4	2-1/4	2-5/8	5-7/8	3-3/4	1-7/8	1	5/8	2-1/2	1-1/2
MIN.	24	3/8	5/8	9-5/8	3	3-1/2	7-3/4	5	2-1/2	1-1/2	13/16	3-1/4	1-1/2
STD.	30	1/2	3/4	12	3-3/4	4-3/8	9-11/16	6-1/4	3	1-7/8	1	4-1/16	1-7/8
EXPWY.	36	5/8	7/8	14-3/8	4-1/2	5-1/4	11-5/8	7-1/2	3-5/8	2-1/4	1-1/4	4-7/8	2-1/4
SPECIAL	48	3/4	1-1/4	19-3/16	6	7	15-1/2	10	4-7/8	3	1-5/8	6-1/2	3



SIGN	DIMENSIONS (INCHES)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
BIKE	18	3/8	5/8	5-3/8	5-1/2	6	4-3/4	3-3/8	1-3/4	1-1/4	2	2-5/8	6-1/4	1-1/2
MIN.	24	3/8	5/8	7-1/8	7-1/4	8	6-1/4	4-1/2	2-11/32	1-3/4	2-3/4	3-1/2	8-1/4	1-1/2
STD.	30	1/2	3/4	8-7/8	9-1/16	10	7-13/16	5-5/8	2-15/16	2-3/16	3-7/16	4-3/8	10-5/16	1-7/8
EXPWY.	36	5/8	7/8	10-5/8	10-7/8	12	9-3/8	6-3/4	3-1/2	2-5/8	4-1/8	5-1/4	12-3/8	2-1/4
FWY.	48	3/4	1-1/4	14-3/16	14-1/2	16	12-1/2	9	4-11/16	3-1/2	5-1/2	7	16-1/2	3



SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
MIN.	24	3/8	5/8	2	3	9	8-1/2	1-1/2
STD.	30	1/2	3/4	2-7/16	3-3/4	11-1/4	10-5/8	1-7/8
EXPWY.	36	5/8	7/8	2-15/16	4-1/2	13-1/2	12-3/4	2-1/4
SPECIAL	48	3/4	1-1/4	3-7/8	6	18	17	3



SIGN	DIMENSIONS (INCHES)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
MIN.	30	1/2	3/4	3-5/16	8-5/16	4-1/8	25	1-11/16	4-1/8	1-7/8	10	11-5/8	7-15/16	13-11/16	7-7/8	8-5/16	2-1/16
STD. & EXPWY.	36	5/8	7/8	4	10	5	30	2	5	2-1/4	12	14	9-1/2	16-1/2	9-1/2	10	2-1/2
SPECIAL	48	3/4	1-1/4	5-1/4	13-1/8	6-9/16	39-5/16	2-5/8	6-9/16	3	16	18-11/16	12-1/16	22	12-7/16	13-1/8	35/16

SIGN	DIMENSIONS (INCHES)									
	A	B	C	D	E	F	G	H	J	
STD. & MIN.	24	3/8	5/8	8	4-1/8	9-3/4	11-5/8	3-1/8	1-1/2	
SPECIAL	30	1/2	3/4	10	5-1/4	12-3/8	14-11/16	4	1-7/8	
SPECIAL	36	5/8	7/8	12	6-1/8	14-5/8	17-1/2	4-3/4	2-1/4	

SIGN	DIMENSIONS (INCHES)							
	A	B	C	D	E	F	G	H
MIN.	30	1/2	3/4	3-3/8	13/16	8-7/16	6-3/4	1-7/8
STD. & EXPWY.	36	5/8	7/8	4	1	10	8	2-1/4
FWY.	48	3/4	1-1/4	5-5/16	1-3/8	13-5/16	10-5/8	3

SIGN	DIMENSIONS (INCHES)											
	A	B	C	D	E	F	G	H	J	K	L	M
MIN. & STD.	36	5/8	7/8	5C	3	6D	1	13-11/16	13-1/16	17-5/8	18-1/4	2-1/4
EXPWY.	48	3/4	1-1/4	7D	3-1/2	7D	1	23-13/16	23-7/8	21-1/2	21-9/16	3

COLORS

SYMBOLS

THE WARNING SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT AND 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"X18"	24"X24" 30"X30"	36"X36"	48"X48"
FLAT SHEET ALUMINUM	0.060"	0.080"	0.100"	0.125"
HIGH DENSITY OVERLAID 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, 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 COMMITTE ON UNIFORM TRAFFIC CONTROL DEVICES.

SPECIFICATIONS

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

REVISIONS AND CORRECTIONS

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

VERMONT AGENCY OF TRANSPORTATION

STANDARD

E-19A