STATE OF VERMONT
AGENCY OF TRANSPORTATION

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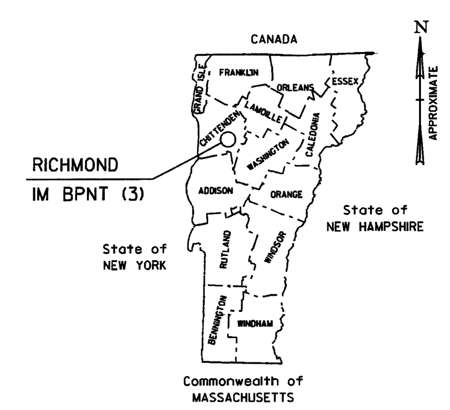
PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF RICHMOND
COUNTY OF CHITTENDEN
BRIDGES NO. 55 N&S, 56 N&S, AND 59 S ON I-89

PROJECT LOCATION: BRIDGES NO. 55 N&S LOCATED ON I-89 OVER JERICHO ROAD (T.H. 4)
BRIDGES NO. 56 N&S LOCATED ON I-89 OVER U.S. 2 AT EXIT 11
BRIDGE NO. 59 S LOCATED ON I-89 OVER KENYON ROAD (T.H. 8)

PROJECT DESCRIPTION: THIS PROJECT INVOLVES CLEANING AND REPAINTING THE EXISTING STEEL SUPERSTRUCTURE MEMBERS AND MINOR ASSOCIATED WORK.



LOCATION MAP
NOT TO SCALE

RECORD PLANS

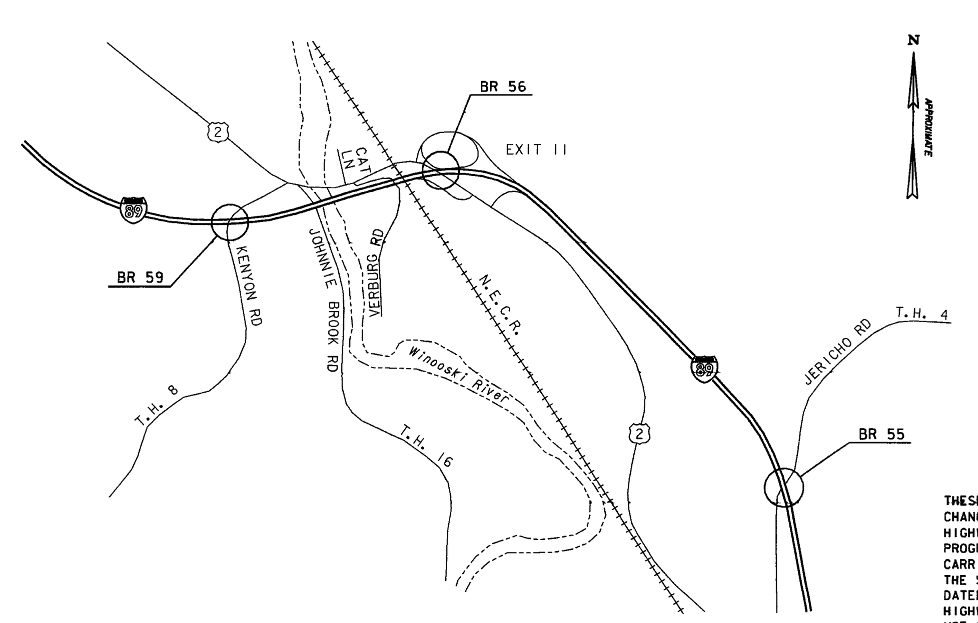
CONTRACTOR AMSTAR OF WESTERN NEW YORK– CHEEKTOWAGA, NY
RESIDENT ENGINEER SCOTT WHEATLEY
CONSTRUCTION BEGAN JUNE 28, 2010
CONSTRUCTION COMPLETE OCTOBER 14, 2010
RECORD PLANS BY SCOTT WHEATLEY

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN

BY Scott Wheatley RESIDENT ENGINEER

DATE MARCH 24, 2011

NOTE Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives



PLAN
NOT TO SCALE

CONVENTIONAL SYMBOLS

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
R.O.W. LINE
PROPERTY LINE
~~R.O.W. TAKING LINE~~
SLOPE RIGHTS
CLEAR ZONE
TOP OF CUT
TOE OF SLOPE

DATUM
VERTICAL N/A
HORIZONTAL N/A

STATE OF VERMONT
SALLY M GUNN
NO. 7496
REGISTERED PROFESSIONAL ENGINEER

BUILT AS DESIGNED

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT. CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JUNE 15, 2006 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

VHB Vanasse Hangen Brustlin, Inc.

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED DATE 12-29-09
PROJECT MANAGER : JOHN H. WEAVER, P.E.
PROJECT NAME : RICHMOND
PROJECT NUMBER : IM BPNT (3)
SHEET 1 OF 18 SHEETS

VHB NO. 52013 z08A206CV DGN plot date: 12/11/2009

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES								TOTALS		DESCRIPTIONS			
BRIDGE NO. 55 N	BRIDGE NO. 55 S	BRIDGE NO. 56 N	BRIDGE NO. 56 S	BRIDGE NO. 59 S	EROSION CONTROL	ROADWAY	FULL CE ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
50	50	100	100	100				400		HR	TRUCK-MOUNTED ATTENUATOR	608.45	
500	500	500	500	1000				3,000		LF	TEMPORARY TRAFFIC BARRIER	621.90	
0	0	130	130	80				340		HR	UNIFORMED TRAFFIC OFFICERS	630.10	
120	120	520	520	150				1,430		HR	FLAGGERS	630.15	
							1	1		LS	FIELD OFFICE - ENGINEERS	631.10	
							1	1		LS	TESTING EQUIPMENT, PROTECTIVE COATINGS	631.18	
							1	1		LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25	
						1		1		LS	MOBILIZATION/DEMOBILIZATION	635.11	
						1		1		LS	TRAFFIC CONTROL (I89-BRIDGE NO. 55 N)	641.10	
						1		1		LS	TRAFFIC CONTROL (I89-BRIDGE NO. 55 S)	641.10	
						1		1		LS	TRAFFIC CONTROL (I89-BRIDGE NO. 56 N)	641.10	
						1		1		LS	TRAFFIC CONTROL (I89-BRIDGE NO. 56 S)	641.10	
						1		1		LS	TRAFFIC CONTROL (I89-BRIDGE NO. 59 S)	641.10	
2	2	2	2	2				10		EA	PORTABLE CHANGEABLE MESSAGE SIGN	641.15	
0	0	1	1	0				2		EA	PORTABLE ARROW BOARD	641.16	
					250			250		SY	GEOTEXTILE FOR SILT FENCE	649.51	
					500			500		SY	TEMPORARY EROSION MATTING	653.20	
1								1		LS	SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I-89-BR. NO. 55 N)	900.645	
	1							1		LS	SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I-89-BR. NO. 55 S)	900.645	
		1						1		LS	SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I-89-BR. NO. 56 N)	900.645	
			1					1		LS	SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I-89-BR. NO. 56 S)	900.645	
				1				1		LS	SPECIAL PROVISION (CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES) (I-89-BR. NO. 59 S)	900.645	
1								1		LS	SPECIAL PROVISION (QC/QA CLEANING & PAINTING EXISTING STEEL STRUCTURES, BARE STEEL) (I-89-BR. NO. 55 N)	900.645	
	1							1		LS	SPECIAL PROVISION (QC/QA CLEANING & PAINTING EXISTING STEEL STRUCTURES, BARE STEEL) (I89-BR. NO. 55 S)	900.645	
		1						1		LS	SPECIAL PROVISION (QC/QA CLEANING & PAINTING EXISTING STEEL STRUCTURES, BARE STEEL) (I89-BR. NO. 56 N)	900.645	
			1					1		LS	SPECIAL PROVISION (QC/QA CLEANING & PAINTING EXISTING STEEL STRUCTURES, BARE STEEL) (I89-BR. NO. 56 S)	900.645	
				1				1		LS	SPECIAL PROVISION (QC/QA CLEANING & PAINTING EXISTING STEEL STRUCTURES, BARE STEEL) (I89-BR. NO. 59 S)	900.645	

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

VHB Vanasse Hangen Brustlin, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RICHMOND	Bridge No. 55,56,59
Highway No. I-89 N&S	Log Sta. / Surv. Sta.

I-89 N&S

QUANTITY SHEET

Designed By C.L. CILLEY	Drawn By C.L. CILLEY
Checked By S.M. GUNN Date 11/09	Bridge Design Supervisor S.M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. IM BPNT (3)

I.G.C. Info.

Bridge Sheet No. Z08A206QS Sheet 2 of 18

PLOTTED 11/16/2009

VHB NO. 52013

PROJECT NOTES:

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS.

2. ALL WORK AND ANY ASSOCIATED ACTIVITY ON THIS PROJECT SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY LIMITS. THE RIGHT-OF-WAY FOR ALL HIGHWAYS OTHER THAN I-89, SHALL BE ASSUMED TO BE 3 RODS UNLESS SHOWN OTHERWISE ON REFERENCE PLANS.

3. STAGING AREAS OFF THE PAVEMENT SHALL UNDERGO VTRANS CONSTRUCTION STAGING REVIEW. ALL DISTURBED STAGING AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. TEMPORARY STAGING AREAS OFF PAVEMENT, IF APPROVED, SHALL UTILIZE 649.51 GEOTEXTILE FOR SILT FENCE AND 653.20 TEMPORARY EROSION MATTING TO PREVENT EROSION AND CONTROL SEDIMENT FROM THE STAGING AREAS.

4. ALL COSTS ASSOCIATED WITH EXTENDING OR FILLING THE DRAIN TUBES SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).

5. GREASE COATING SHALL BE APPLIED TO ALL BEAMS AND DIAPHRAGMS WITHIN 20 FEET OF EACH ABUTMENT (FIXED AND EXPANSION JOINTS); AND AT PIERS FROM ITS END TO A LENGTH EQUAL TO TWO TIMES THE BEAM DEPTH FROM POINT OF BEARING AND SHALL INCLUDE ALL EXPOSED SURFACE AREAS OF ATTACHMENTS OR MEMBERS WITHIN THE DISTANCE. COST SHALL BE INCIDENTAL TO ITEM 900.645, SPECIAL PROVISION (QC/QA CLEAN AND PAINT EXISTING STEEL STRUCTURES, BARE STEEL).

TRAFFIC CONTROL

1. THE CONTRACTOR SHALL SUBMIT SITE SPECIFIC TRAFFIC CONTROL PLANS DEPICTING EACH PHASE OF THE PLANNED WORK FOR ANY WORK ON I-89 OR FROM THE ROADS BELOW THE BRIDGES. THE DESIGN SHALL ENSURE STATE-REGULATED WIDE LOADS CAN BE ACCOMMODATED DURING LANE CLOSURES. PLANS SHALL BE SUBMITTED IN ACCORDANCE WITH SECTION 105.03 AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN AN APPROPRIATE DISCIPLINE IN THE STATE OF VERMONT.

2. THE CONTRACTOR SHALL OBTAIN THE MOST CURRENT TRAFFIC VOLUMES FOR I-89 AND U.S. 2 FOR USE IN THE PROJECT SPECIFIC TRAFFIC CONTROL PLANS.

BRIDGE NUMBER	2009 AADT	
	NORTHBOUND	SOUTHBOUND
55	12,400	12,400
56	13,700	10,300
58	13,700	13,700
59	13,700	13,700

3. THE TRAFFIC CONTROL PLANS SHALL SHOW ALL RAMPS AND I-89 ACCELERATION AND DECELERATION LANES AT EXIT 11.

4. UNIFORMED TRAFFIC OFFICERS ARE REQUIRED FOR THE TRAFFIC CONTROL DESIGN ON I-89.

5. NIGHT WORK WILL BE THE PREFERRED METHOD OF CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE RESIDENT ENGINEER. LANE CLOSURES WILL NOT BE ALLOWED DURING THE FOLLOWING TIME PERIODS;

   I-89 NORTHBOUND
   - 6AM-10AM MONDAY-THURSDAY
   - 6AM-10AM AND 2PM-7PM FRIDAY

   I-89 SOUTHBOUND
   - 3PM-7PM MONDAY-THURSDAY
   - 2PM-7PM FRIDAY

6. UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS, ALL COSTS FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE CONSIDERED TO BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR TRAFFIC CONTROL, ITEM 641.10.

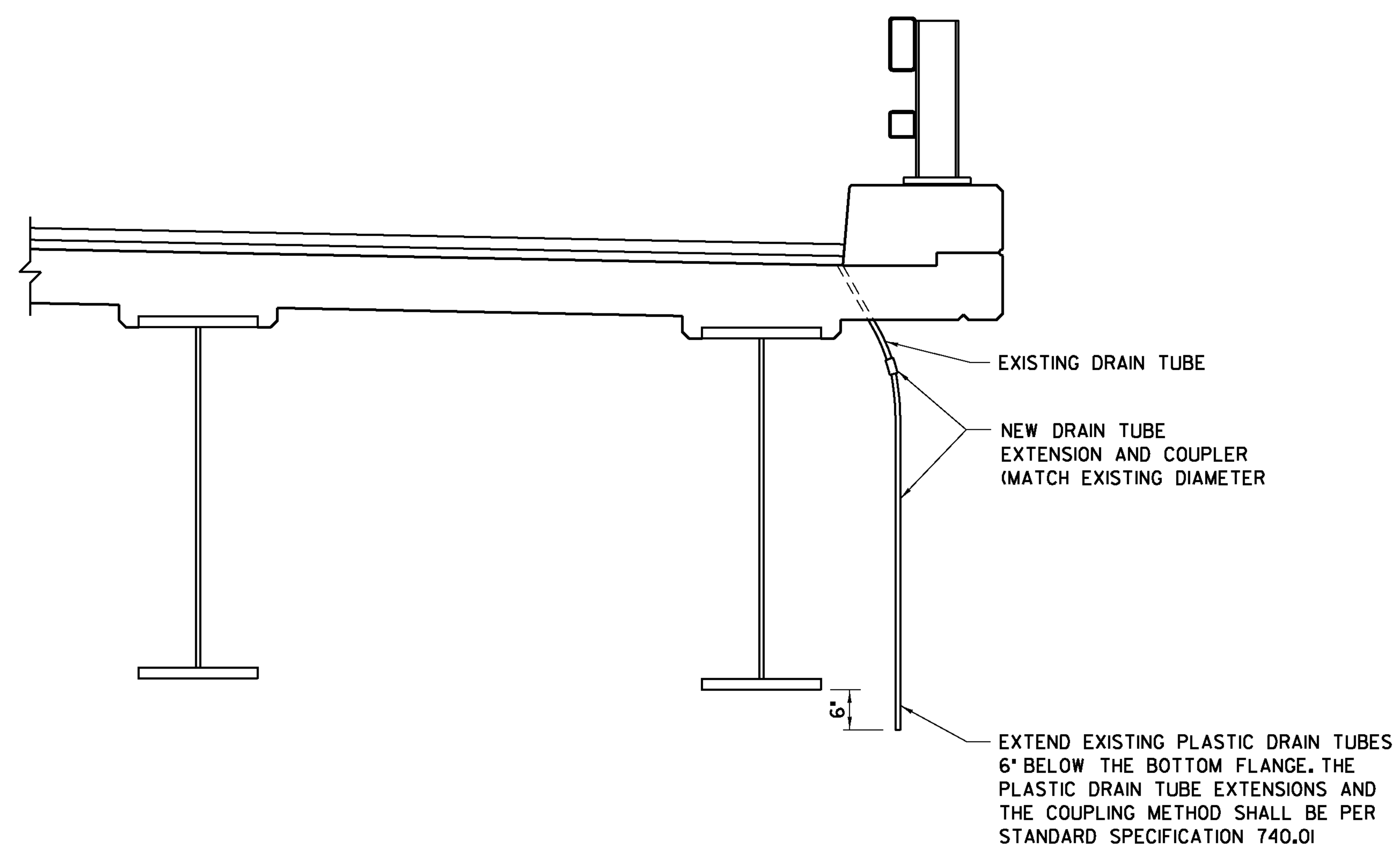
7. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) AND PRINT MEDIA SHALL BE USED 2 WEEKS IN ADVANCE OF NIGHTTIME LANE CLOSURE AS DIRECTED BY THE ENGINEER.

8. RIGHT-OF-WAY FENCE MAY HAVE TO BE REMOVED AND RESET IN ACCORDANCE WITH SECTION 620 FOR EGRESS AND INGRESS. THIS WORK SHALL BE INCIDENTAL TO TRAFFIC CONTROL, ITEM 641.10.

9. SEE SPECIAL PROVISIONS FOR PROJECT SCHEDULE BASED ON COORDINATION WITH OTHER I-89 CONSTRUCTION PROJECTS.

UTILITIES

1. REFER TO UTILITIES SPECIAL PROVISIONS.



DRAIN TUBE EXTENSION DETAIL

NOT TO SCALE

NOTES:

1. DRAIN TUBE EXTENSION DETAIL TO BE USED WHERE THE END OF EXISTING TUBES ARE LESS THAN 6" BELOW ADJACENT BEAM AS DIRECTED BY THE RESIDENT ENGINEER.

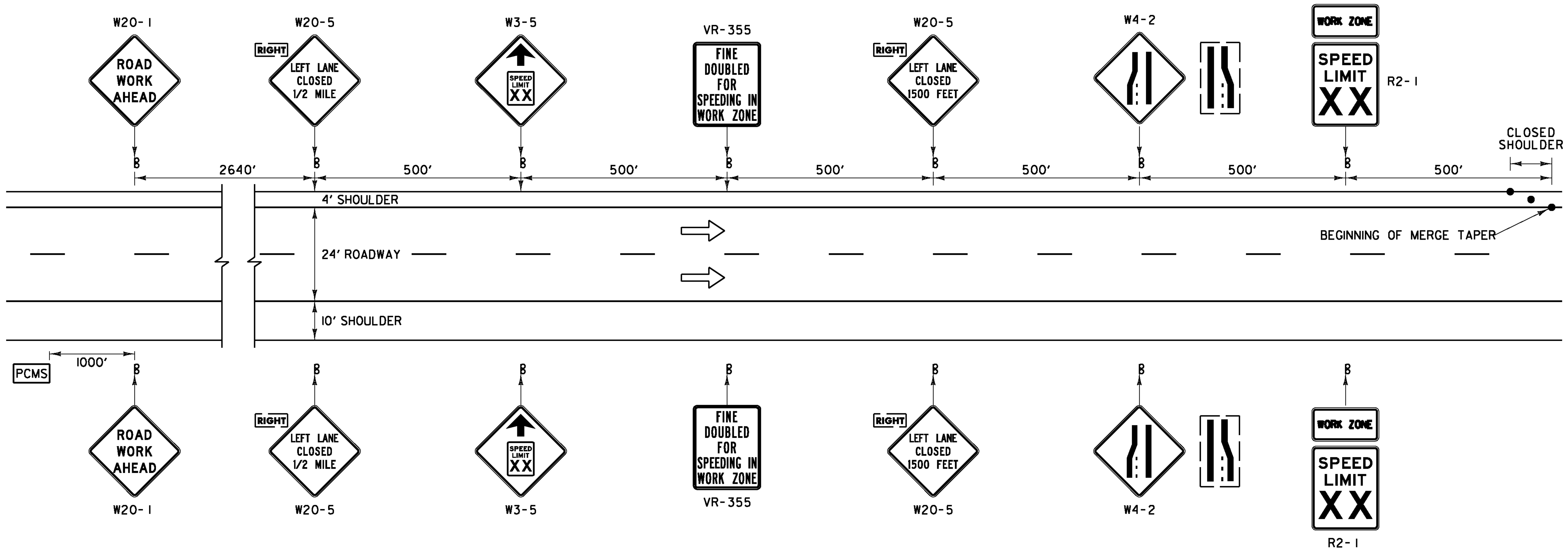
2. IF EXISTING DRAIN TUBE IS TOO SHORT TO PROVIDE AN ADEQUATE CONNECTION, THE CONTRACTOR SHALL COMPLETELY FILL THE TUBE WITH POLYURETHANE SEALANT CONFORMING TO SUBSECTION 707.05. TUBES TO BE FILLED WITH POLYURETHANE SEALANT SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEING FILLED.

VHB Vanasse Hangen Brustlin, Inc.

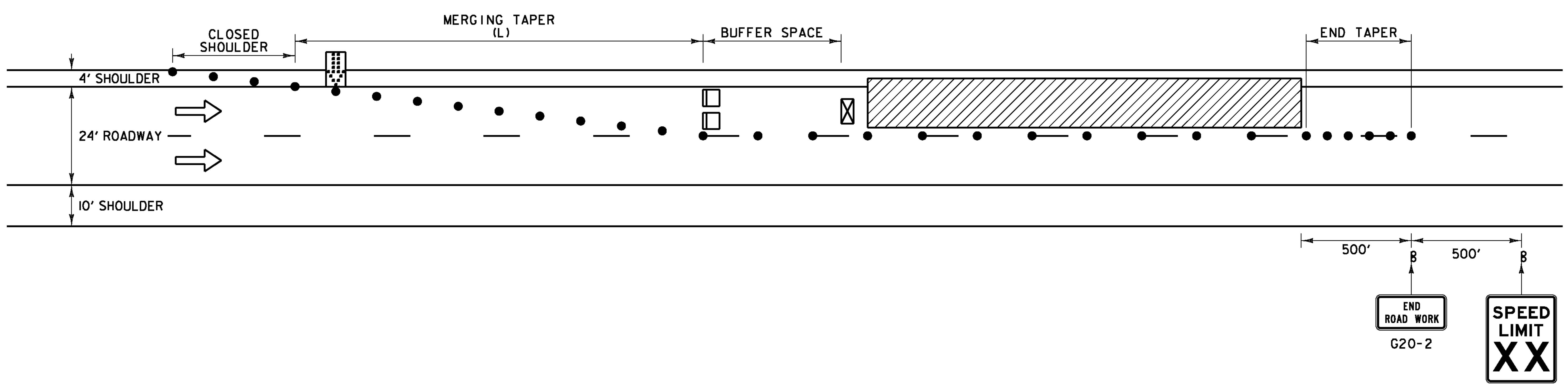
STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RICHMOND	Bridge No. 55,56,59
Highway No. I-89 N&S	Log Sta. / Surv. Sta.
I-89 N&S	
PROJECT NOTES & STANDARD DETAILS	
Designed By C.L. CILLEY	Drawn By C.L. CILLEY
Checked By S.M. GUNN Date 11/09	Bridge Design Supervisor S.M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. IM BPNT (3)
I.G.C. Info.	
Bridge Sheet No. Z08A206DET	Sheet 3 of 18

PLOTTED 11/16/2009 VHB NO. 52013



CONSTRUCTION APPROACH SIGNING ON I-89, LEFT LANE CLOSED



TRAFFIC CONTROL ON I-89, LEFT LANE CLOSED

(SEE SHEET 5 FOR RIGHT LANE CLOSURE)

LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- PORTABLE ARROW BOARD
- TYPE III BARRICADE
- WORK AREA
- TRUCK/TRAILER MOUNTED ATTENUATOR
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 15)

POSTED SPEED (MPH)	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	BARRIER FLARE RATE (MINIMUM)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	MERGING 12 FT LANE (L)				TAPER (S)	TANGENT (2S)
≤40	90	320	160	1:9	305	40	80
45	150	540	270	1:9	360	45	90
50	170	600	300	1:11	425	50	100
55	185	660	330	1:13	495	55	110
60	200	720	360	1:13	570	60	120
65	215	780	390	1:13	645	65	130

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:
L = WS FOR POSTED SPEEDS OF 45 MPH OR GREATER
L = WS²/60 FOR POSTED SPEEDS OF 40 MPH OR LESS

L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET (TYPICAL)
S = POSTED SPEED IN MPH

TRAFFIC CONTROL NOTES I-89:

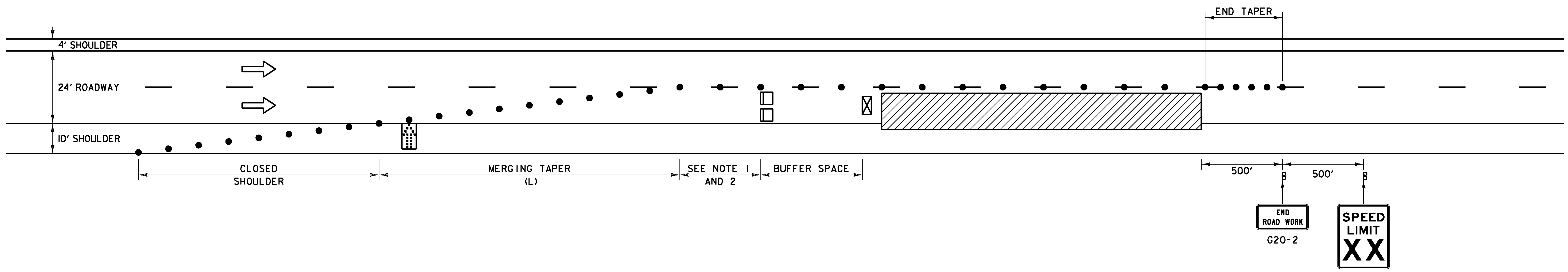
1. THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 55, 56, AND 59 TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING ANY NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
2. THE EXISTING SPEED LIMIT FOR I-89 IS 65 MPH. THE SPEED LIMIT WILL BE REDUCED TO 50 MPH IN THE WORK ZONE FOR THIS PROJECT. ANY EXISTING SPEED LIMIT SIGNS WITHIN THE SPEED REDUCTION AREA SHALL BE COMPLETELY COVERED.
3. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
4. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
5. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
6. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
7. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES. DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK, EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
8. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL.
9. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
10. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
11. THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF RIGHT AND LEFT LANES ON PROJECT BEFORE WORK COMMENCES.
12. THE NUMBER OF CHANNELIZING DEVICES, TYPE III BARRICADE AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR, CURVE, ETC.). WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
13. PLACE LAST CHANNELIZING DEVICE 100 FEET BEYOND THE ANTICIPATED WORK ZONE TERMINAL POINT EACH DAY AND THEN START THE END TAPER. THE END TAPER SHALL BE CONSTRUCTED OF 5 ADDITIONAL RETROREFLECTIVE DRUMS SPACED AT 10 FEET ON CENTER.
14. THE ARROW BOARD SHALL BE PLACED ON THE SHOULDER OF THE ROADWAY, OR IF PRACTICAL FURTHER FROM THE TRAVELED LANE AT THE END OF THE SHOULDER TAPER.
15. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE USED AT THE DISCRETION OF THE ENGINEER. THE PCMS SHALL BE USED IN ACCORDANCE WITH SECTION 6F.55 OF THE MUTCD.
16. TRAVEL LANE SHALL BE 12 FEET WIDE.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RICHMOND	Bridge No. 55,56,59
	Log Sta.
Highway No. I-89 N&S	Surv. Sta.
I-89 N&S	
TRAFFIC CONTROL (SHEET 1 OF 3)	
Designed By VTRANS	Drawn By VTRANS
Checked By S. M. GUNN Date 11/09	Bridge Design Supervisor S. M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. IM BPNT (3)
I.G.C. Info.	
Bridge Sheet No. Z08A206TC	Sheet 4 of 18

VHB Vanasse Hangen Brustlin, Inc.

PLOTTED 11/16/2009 VHB NO. 52013



TRAFFIC CONTROL ON I-89, RIGHT LANE CLOSED

TRAFFIC CONTROL NOTES:

SEE NOTES ON SHEET 4

LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- PORTABLE ARROW BOARD
- TYPE III BARRICADE
- WORK AREA
- TRUCK/TRAILER MOUNTED ATTENUATOR
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 15 ON TRAFFIC CONTROL SHEET 1)

POSTED SPEED (MPH)	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	BARRIER FLARE RATE (MINIMUM)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	MERGING 12 FT LANE (L)				TAPER (S)	TANGENT (2S)
≤40	90	320	160	1:9	305	40	80
45	150	540	270	1:9	360	45	90
50	170	600	300	1:11	425	50	100
55	185	660	330	1:13	495	55	110
60	200	720	360	1:13	570	60	120
65	215	780	390	1:13	645	65	130

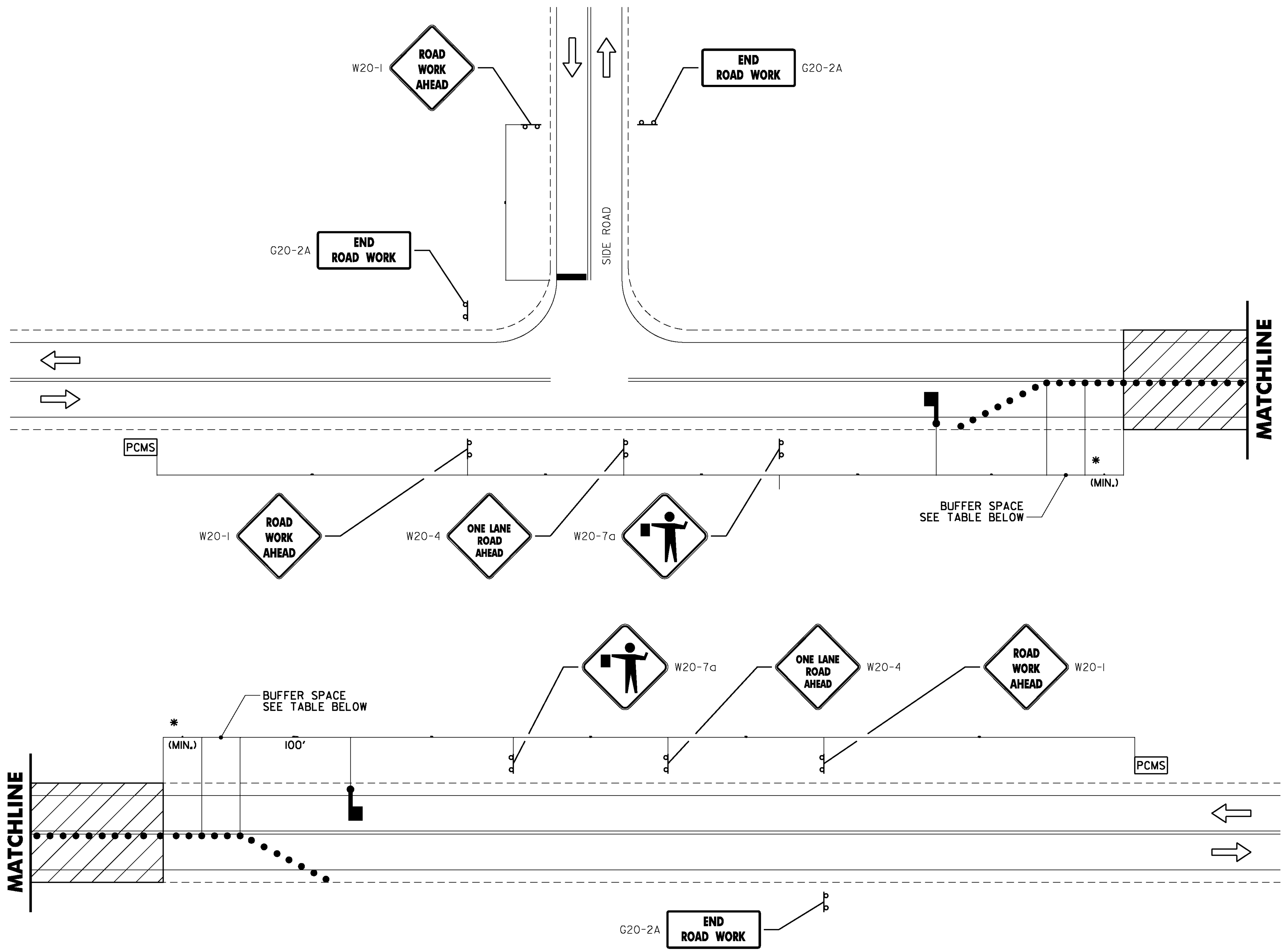
TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:
L = WS FOR POSTED SPEEDS OF 45 MPH OR GREATER
L = $WS^2/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET. (TYPICAL)
S = POSTED SPEED IN MPH

VHB Vanasse Hangen Brustlin, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of RICHMOND	Bridge No. 55, 56, 59
Highway No. I-89 N&S	Log Sta.
	Surv. Sta.
I-89 N&S	
TRAFFIC CONTROL (SHEET 2 OF 3)	
Designed By VTRANS	Drawn By VTRANS
Checked By S. M. GUNN Date 11/09	Bridge Design Supervisor S. M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. IM BPNT (3)
L.G.C. Info.	
Bridge Sheet No. Z08A206TC	Sheet 5 of 18



* - ACTUAL DIMENSION TO BE DETERMINED BY INDIVIDUAL BRIDGE SITE CONDITIONS AND TO BE SHOWN ON TRAFFIC CONTROL PLANS SUBMITTED BY THE CONTRACTOR.

TRAFFIC CONTROL PLAN ON HIGHWAYS BELOW BRIDGES

NOT TO SCALE

LEGEND

- FLOW OF TRAFFIC
- RETROREFLECTIVE PLASTIC DRUM
- WORK AREA
- FLAGGER
- PCMS PORTABLE CHANGEABLE MESSAGE SIGN (SEE NOTE 13)

TRAFFIC CONTROL NOTES OTHER HIGHWAYS:

1. THE TRAFFIC CONTROL PLAN SHOWN IS A SCHEMATIC ONLY AND SHOULD BE USED AS A REFERENCE. THE CONTRACTOR SHALL SUBMIT A SITE SPECIFIC TRAFFIC CONTROL PLAN FOR BRIDGES 55, 56, AND 59 TO VTRANS FOR APPROVAL. PAYMENT FOR PREPARING AND SUBMITTING THE TRAFFIC CONTROL PLAN, AND MAKING ANY NECESSARY REVISIONS TO THE PLAN, WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 641.10. THE CONTRACTOR SHALL ALLOW TWO WEEKS FOR APPROVAL OF THE TRAFFIC CONTROL PLAN. NO WORK SHALL COMMENCE UNTIL THE CONTRACTOR HAS AN APPROVED TRAFFIC CONTROL PLAN.
2. ANY PARKING AREAS OR DRIVES WITH AN ENTRANCE/EXIT BETWEEN THE FLAGGER AND THE WORK ZONE SHALL HAVE THAT ENTRANCE/EXIT CLOSED WITH CONES OR DRUMS, PROVIDED ADDITIONAL ENTRANCES/EXITS EXIST IN THE AREA APPROACHING THE FLAGGER.
3. ANY PUBLIC HIGHWAYS BETWEEN THE FLAGGER AND THE WORK ZONE WILL REQUIRE AN ADDITIONAL FLAGGER TO MAINTAIN TRAFFIC CONTROL FOR THE PUBLIC HIGHWAY.
4. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS OR CORNER SIGHT DISTANCE FROM TOWN HIGHWAYS OR DRIVES.
5. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS" BOOK (SHS) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
6. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED.
7. ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
8. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
9. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL.
10. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND AT ONE FOOT MINIMUM ABOVE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
11. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
12. THE NUMBER OF CHANNELIZING DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE TRAFFIC CONTROL PLAN SUBMITTED BY THE CONTRACTOR. WARNING LIGHTS SHALL NOT BE USED ON CHANNELIZING DEVICES.
13. THE PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) SHALL BE USED AT THE DISCRETION OF THE ENGINEER. THE PCMS SHALL BE USED IN ACCORDANCE WITH SECTION 6F.55 OF THE MUTCD. THE PCMS SHALL READ 'ONE WAY TRAFFIC AHEAD BE PREPARED TO STOP'.

BUFFER SPACE TABLE

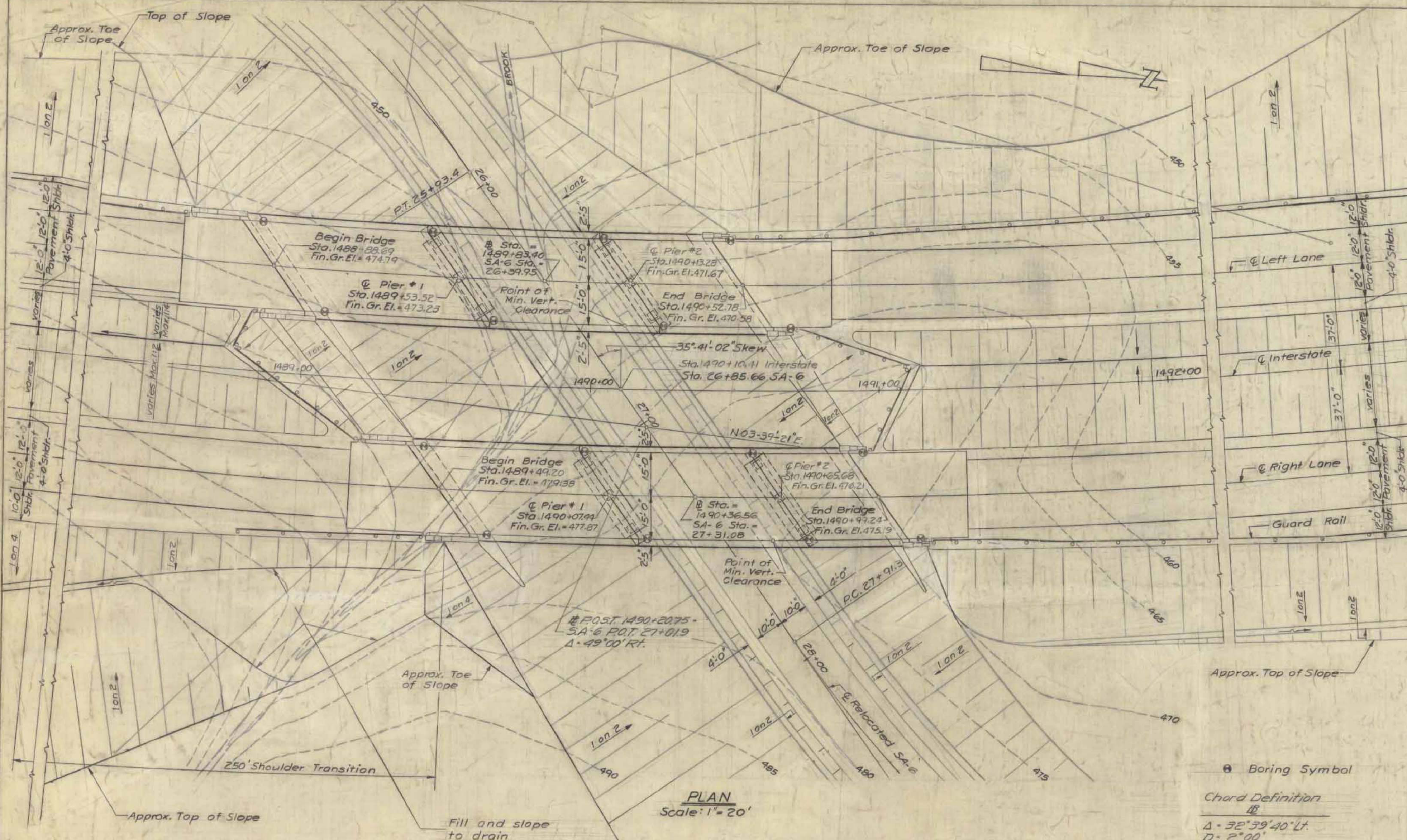
POSTED SPEED (MPH)	MINIMUM BUFFER SPACE LENGTH (FT)
35	250
40	305
45	360
50	425

VHB Vanasse Hangen Brustlin, Inc.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

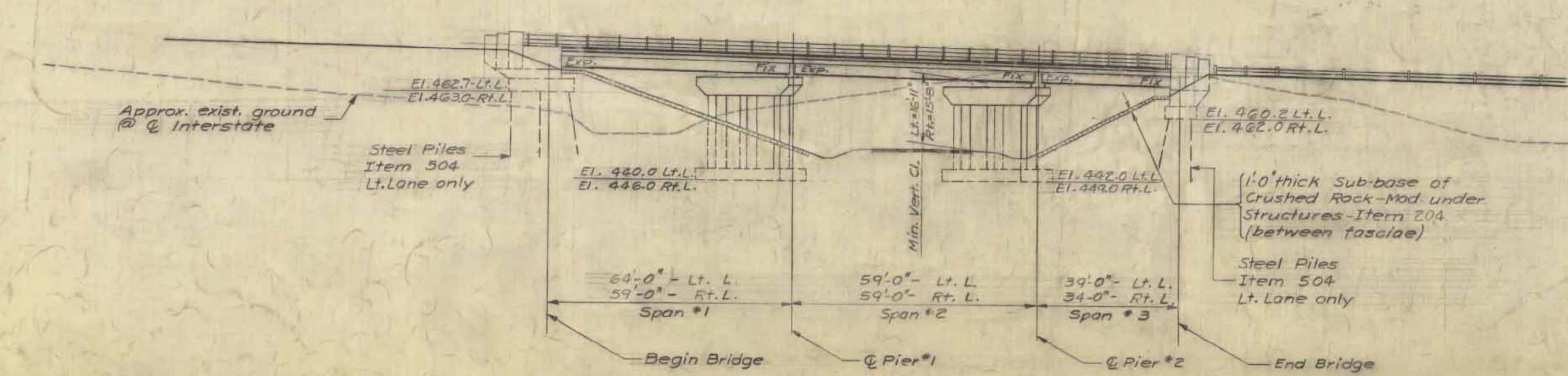
Town Of RICHMOND	Bridge No. 55,56,59
Highway No. I-89 N&S	Log Sta. / Surv. Sta.
I-89 N&S	
TRAFFIC CONTROL (SHEET 3 OF 3)	
Designed By VTRANS	Drawn By VTRANS
Checked By S. M. GUNN Date 11/09	Bridge Design Supervisor S. M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. IM BPNT (3)
I.G.C. Info.	
Bridge Sheet No. Z08A206TC	Sheet 6 of 18

PLOTTED 11/16/2009 VHB NO. 52013



PLAN
Scale: 1" = 20'

Chord Definition
℄
Δ = 32°39'40" Lt.
D = 2°00'
R = 2864.9
T = 839.4
L = 1633.1
E = 120.4
Bank 3/16"/ft.



ELEVATION
Scale: 1" = 20'

REFERENCE DRAWINGS

STANDARD SHEETS

SCB-30-60
SCB-D-60
SB-5G-60
SB-20-60
SB-22-60

INDEX OF DRAWINGS

GENERAL NOTES:

1. Materials and Construction shall conform to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, dated 1956.
2. All design in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, dated 1957, Loading is H20-S16-44 truck as modifed for National System of Interstate Highways
3. Rt. Lane abutments and all piers shall be supported on spread footings bearing on soil. Allowable soil bearing pressure:
   Rt. Lane Abutments = $1\frac{1}{2}$ T/FT^2
   Piers = $2\frac{1}{2}$ T/FT^2
   Lt. Lane abutments shall be supported on 12BP53 Steel Bearing Piles - Item 504. Estimated length of piles = 15'
4. The final coat of field paint shall be green unless otherwise directed by the engineer.
5. All dimensions given are measured horizontally or vertically unless otherwise noted or shown.
6. All dimensions given at 68°F.
7. All reinforcement to have a clear cover of 2" unless otherwise noted.
8. All exposed edges of concrete shall be chamfered 1"×1" unless otherwise noted
9. Steel Bearing Piles shall be driven to ledge rock or refusal unless otherwise approved by the engineer. When piles are driven in fill, the material shall be Granular Borrow, Item 102-A. (Fill to be brought to elev. at top of piles before driving - then excav. as #107
10. Unless otherwise called for all beams shall be cambered as specified on SCB-D-60.
11. All expansion material shall be premoulded cork containing no bituminous or asphalt.

RICHMOND
IM BPNT (3)
SHEET 7 OF 18
BRIDGE 55

FOR REFERENCE ONLY

555

PRELIMINARY INFORMATION SHEET FOR BRIDGES

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON - RICHMOND
INTERSTATE ROUTE 89

INTERSTATE BRIDGE OVER RELOCATED SA-6
GENERAL PLAN AND ELEVATION

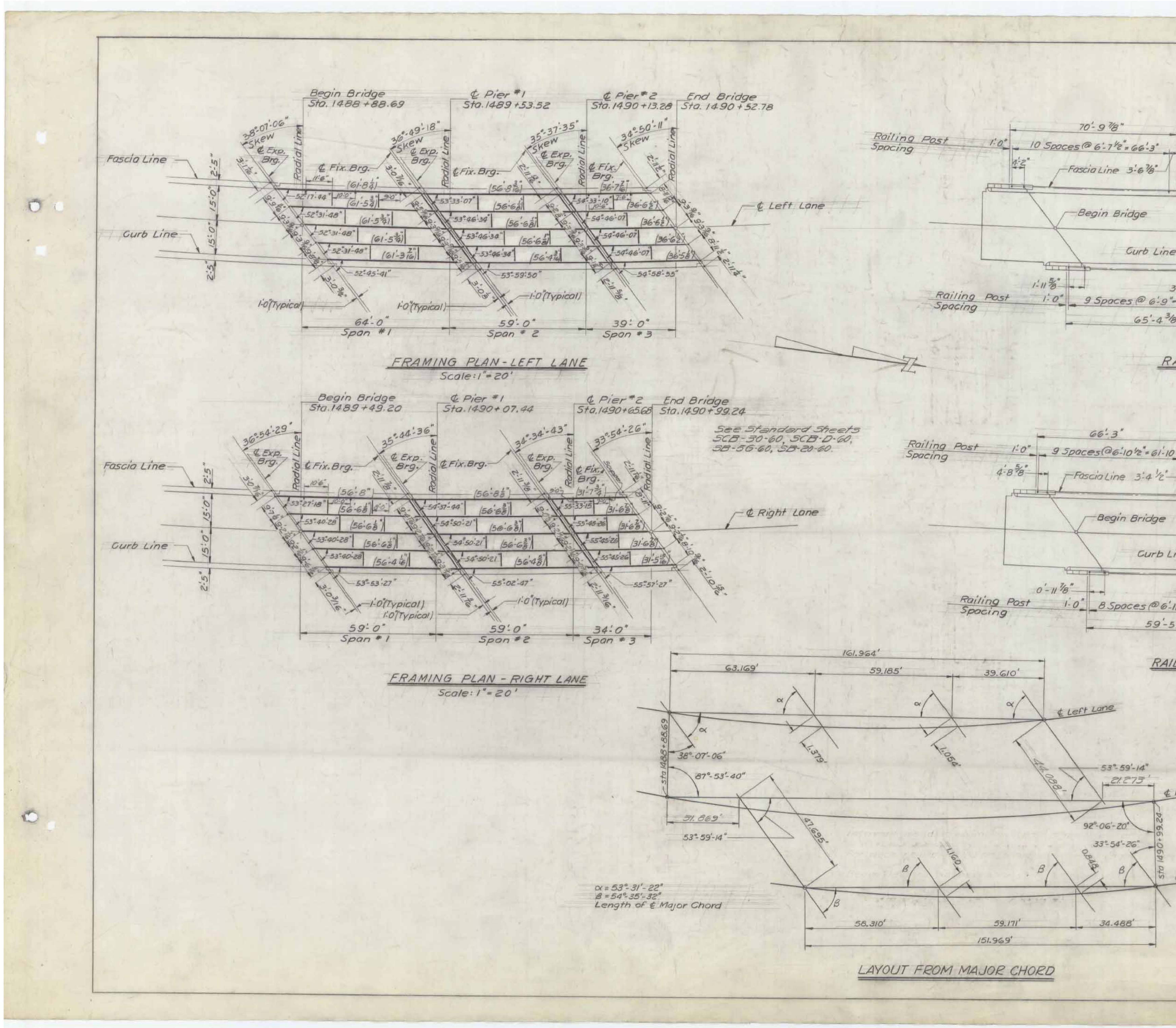
BR# 55

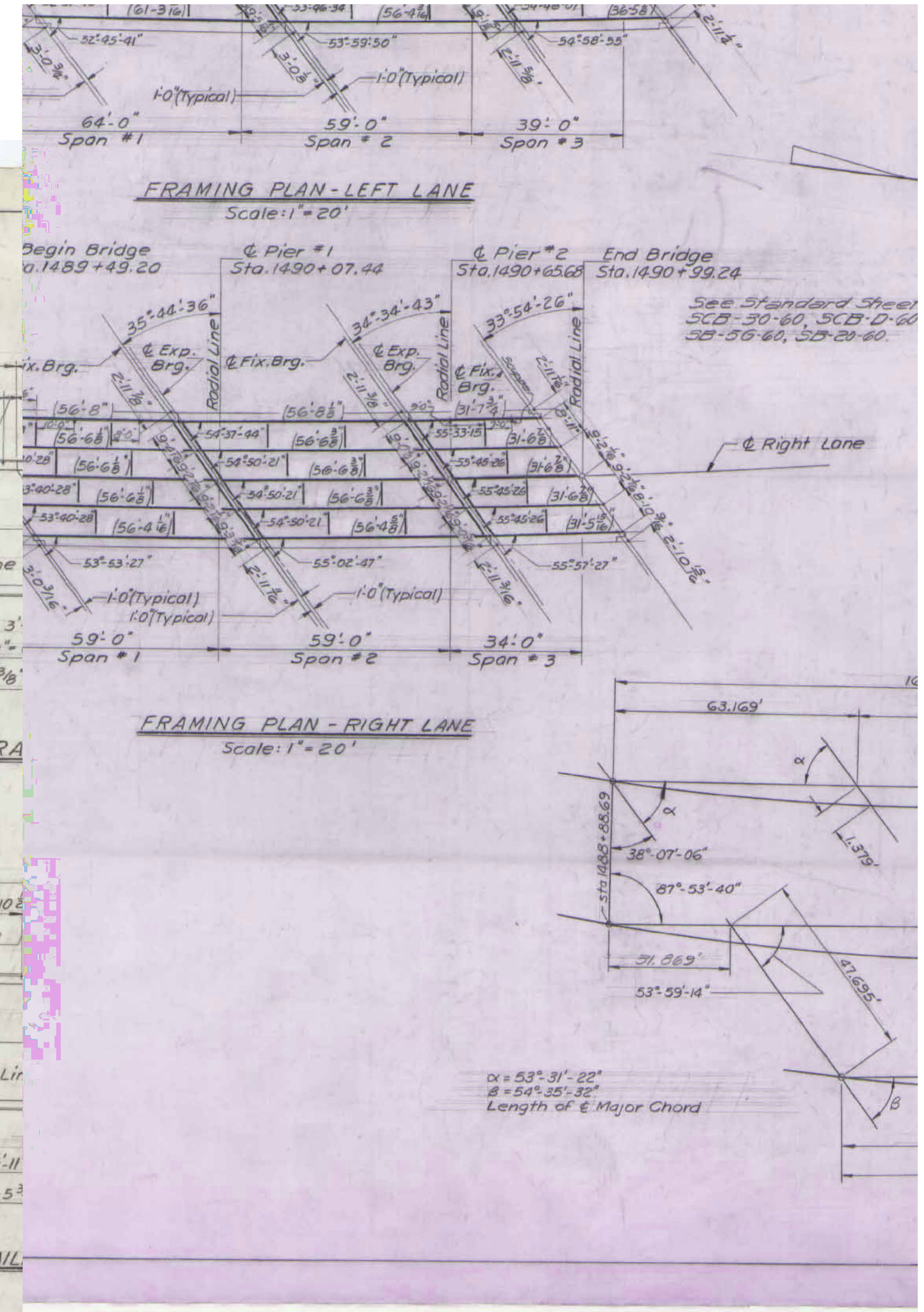
McFARLAND - JOHNSON
CONSULTING ENGINEERS
BINGHAMTON NEW YORK

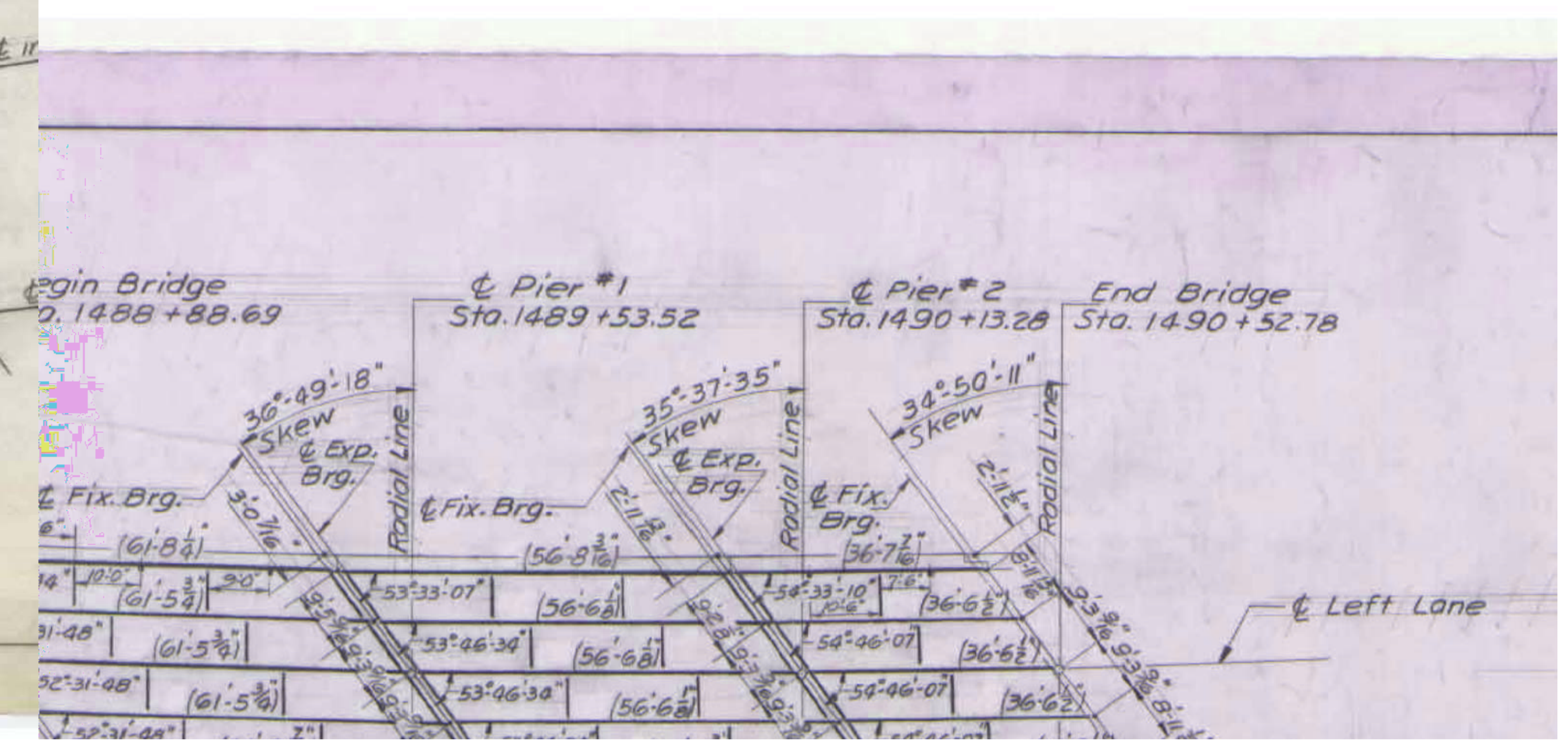
DESIGNED: L.H.S.	CHECKED: H.B.	DATE: 7-25-61
DRAWN: H.H.T.	IN CHARGE: H.G.C.	SCALE: 1" = 20'

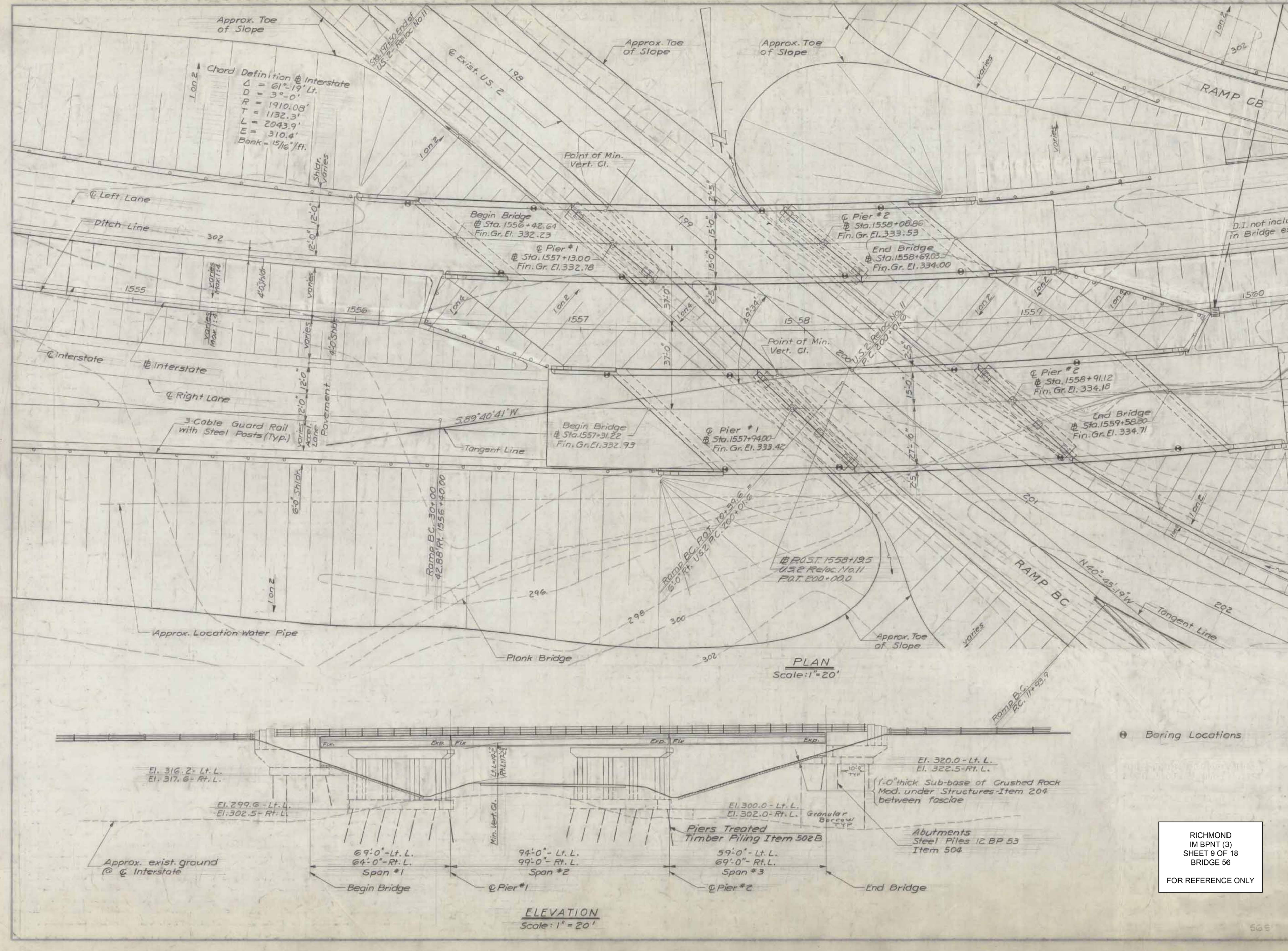
PROJECT NO. I 89-2(8) SH. 96 OF 281

CONTRACT NO. 4 BRIDGE SHEET 1 OF 17


Begin Bridge
Sta. 1488+88.69
℄ Pier #1
Sta. 1489+53.52
℄ Pier #2
Sta. 1490+13.28
End Bridge
Sta. 1490+52.78
Fascia Line
Curb Line
℄ Left Lane
64'-0"
Span #1
59'-0"
Span #2
39'-0"
Span #3
FRAMING PLAN - LEFT LANE
Scale: 1" = 20'
Begin Bridge
Sta. 1489+49.20
℄ Pier #1
Sta. 1490+07.44
℄ Pier #2
Sta. 1490+65.68
End Bridge
Sta. 1490+99.24
See Standard Sheets
SCB-30-60, SCB-D-60,
SB-56-60, SB-20-60.
℄ Right Lane
59'-0"
Span #1
59'-0"
Span #2
34'-0"
Span #3
FRAMING PLAN - RIGHT LANE
Scale: 1" = 20'
Railing Post Spacing
Begin Bridge
161.964'
63.169'
59.185'
39.610'
℄ Left Lane
38°-07'-06"
87°-53'-40"
31.869'
53°-59'-14"
47.695'
α = 53°-31'-22"
β = 54°-35'-32"
Length of ℄ Major Chord
56.310'
59.171'
34.488'
151.969'
LAYOUT FROM MAJOR CHORD


FRAMING PLAN - LEFT LANE
Scale: 1" = 20'
FRAMING PLAN - RIGHT LANE
Scale: 1" = 20'
See Standard Sheets
SCB-30-60, SCB-D-60,
SB-56-60, SB-20-60.
℄ Right Lane
α = 53°-31'-22"
β = 54°-35'-32"
Length of ℄ Major Chord


℄ Pier #1
Sta. 1489+53.52
℄ Pier #2
Sta. 1490+13.28
End Bridge
Sta. 1490+52.78
℄ Left Lane



NOTE:
1. For General Notes see sheet # 2.

RICHMOND
IM BPNT (3)
SHEET 9 OF 18
BRIDGE 56
FOR REFERENCE ONLY

PRELIMINARY INFORMATION SHEET FOR BRIDGES

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON - RICHMOND
INTERSTATE ROUTE 89

INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
GENERAL PLAN & ELEVATION

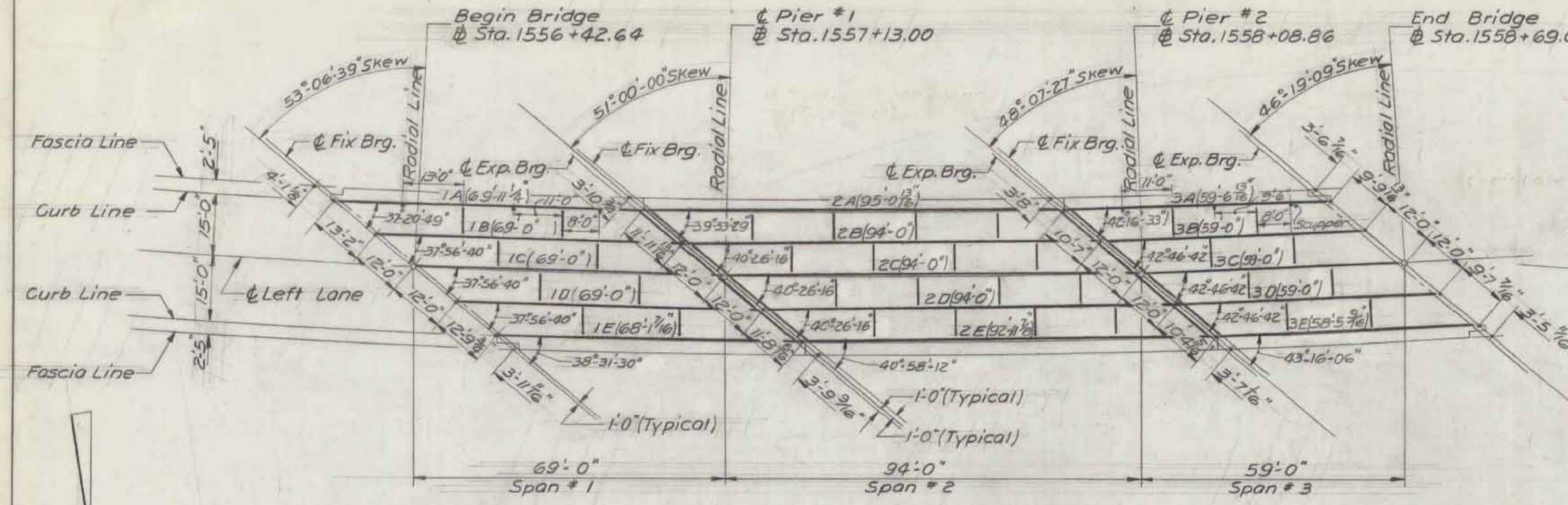
BR #56

McFARLAND - JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

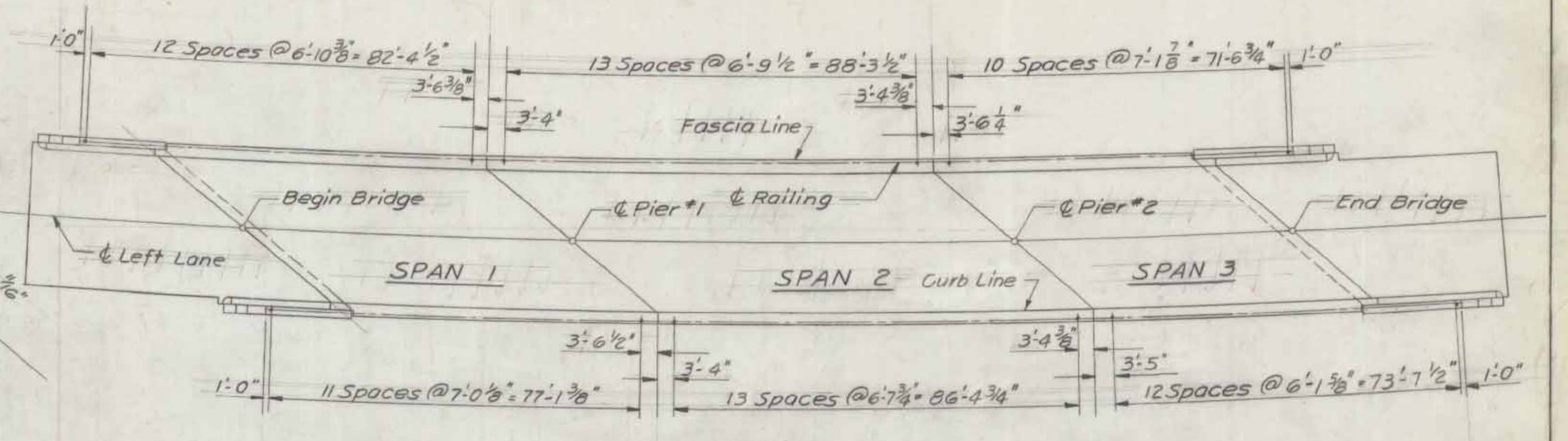
DESIGNED L.H.S.	CHECKED H.B.	DATE 7-25-61
DRAWN H.T.	IN CHARGE H.G.C.	SCALE: 1"=20'

PROJECT NO. I 89-2(8) SH. 113 OF 261

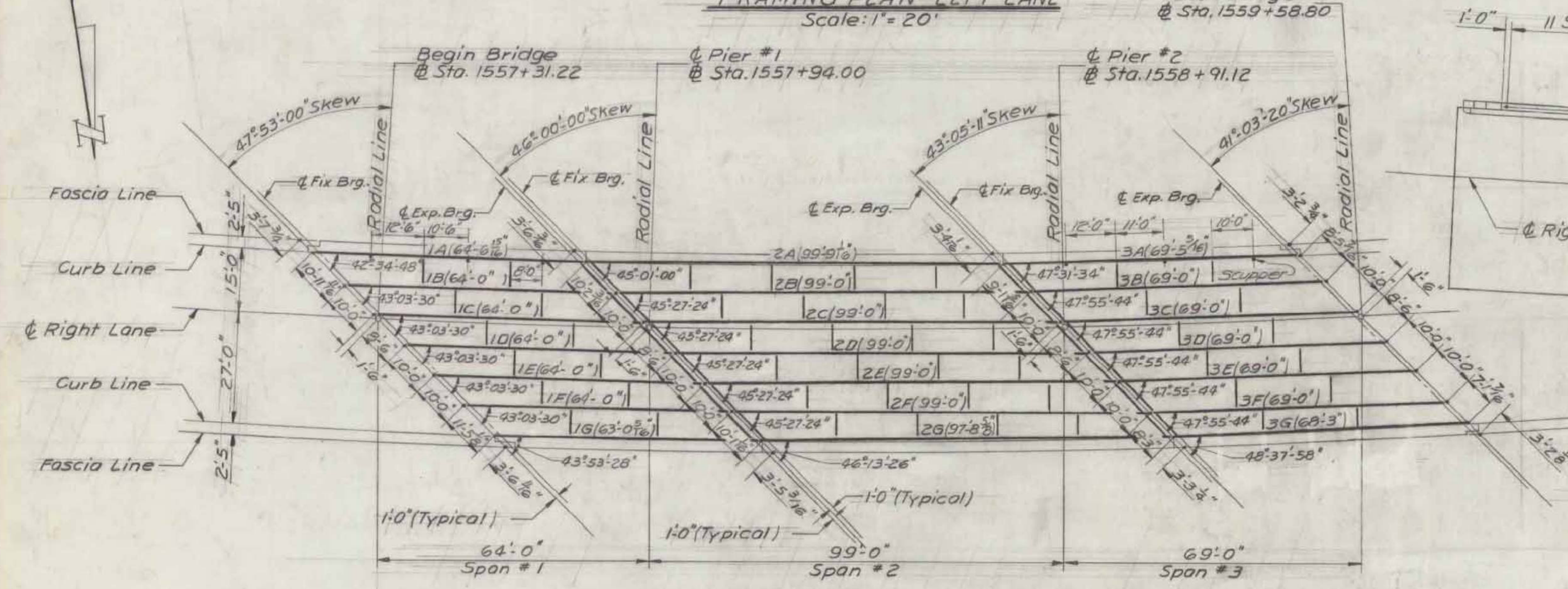
CONTRACT NO. 4 BRIDGE SHEET 1 OF 18



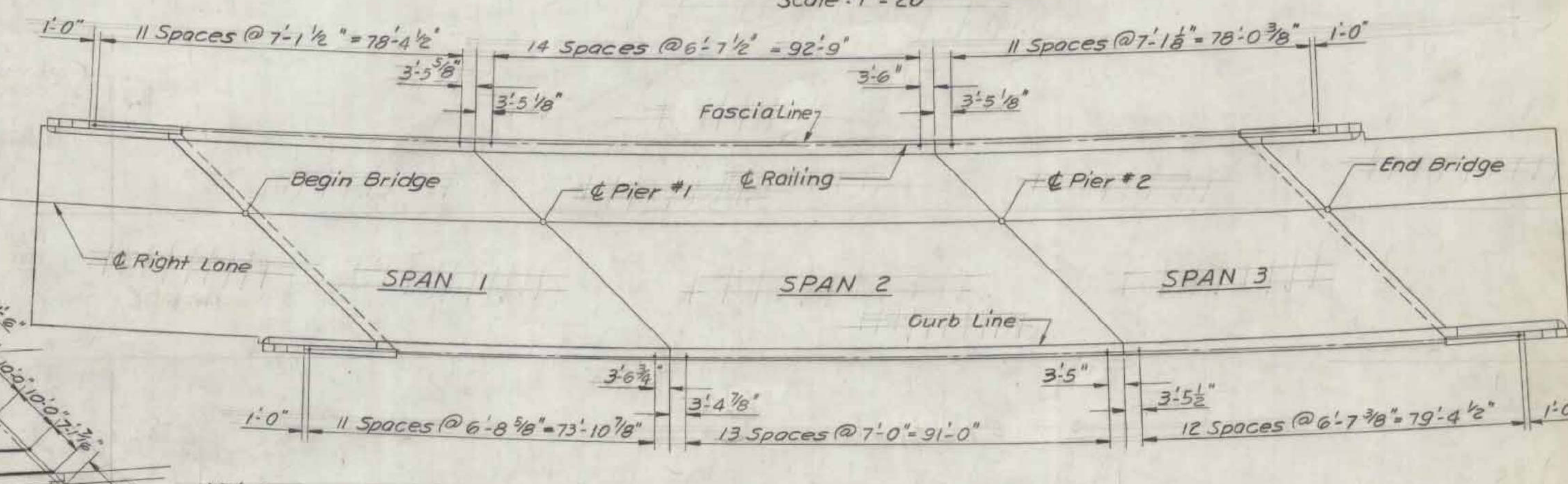
FRAMING PLAN—LEFT LANE
Scale: 1" = 20'



RAILING PLAN—LEFT LANE
Scale: 1" = 20'



FRAMING PLAN—RIGHT LANE
Scale: 1" = 20'



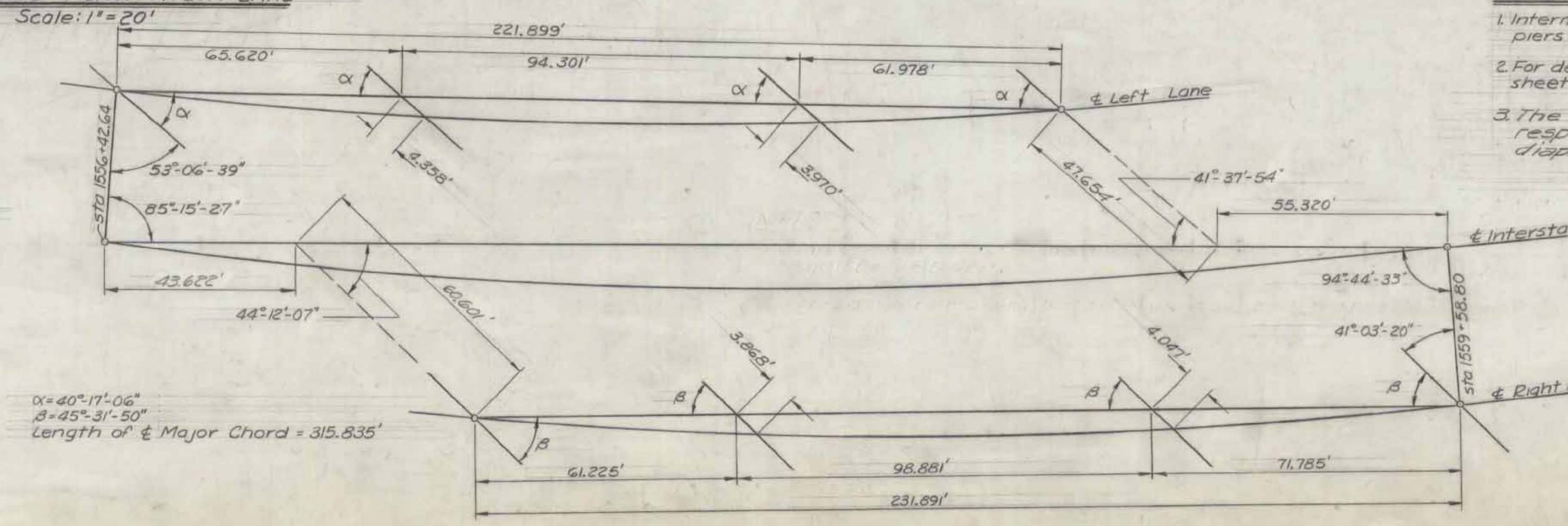
RAILING PLAN—RIGHT LANE
Scale: 1" = 20'

Note:
See Standard Sheets
SCB-38-60, SCB-42-60, SCB-D-60,
SB-20-60, SB-56-60

RICHMOND
IM BPNT (3)
SHEET 10 OF 18
BRIDGE 56

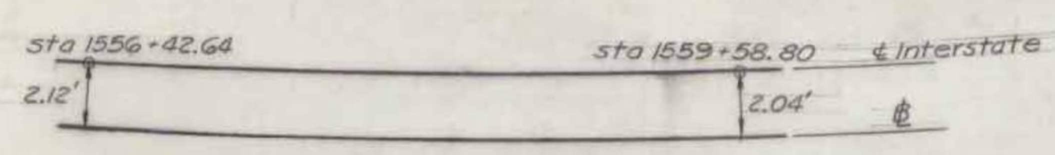
FOR REFERENCE ONLY

NOTES:
1. Intermediate diaphragms and end diaphragms at piers shall be 18 C 42.7.
2. For deck reinforcing bar schedule see bridge sheet #16 & #17
3. The structural steel fabricator shall be responsible for the location and length of steel diaphragms.



α = 40°-17'-06"
β = 45°-31'-50"
Length of ℄ Major Chord = 315.835'

LAYOUT FROM MAJOR CHORD (no scale)



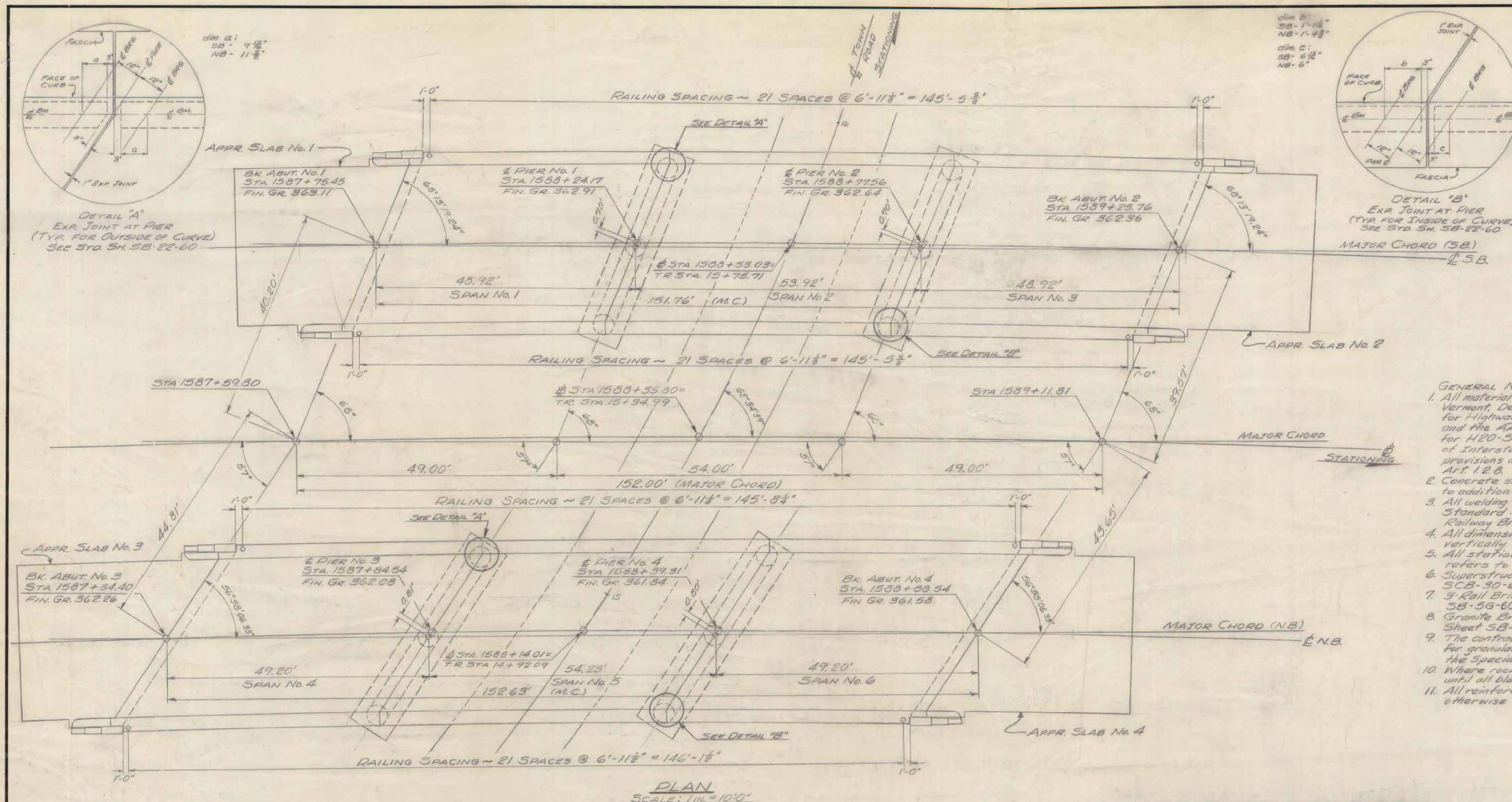
TIE TO BASELINE (no scale)

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON-RICHMOND
INTERSTATE ROUTE 89
INTERSTATE BRIDGE OVER US-2
RICHMOND INTERCHANGE
FRAMING PLANS & RAILING PLANS
McFARLAND-JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

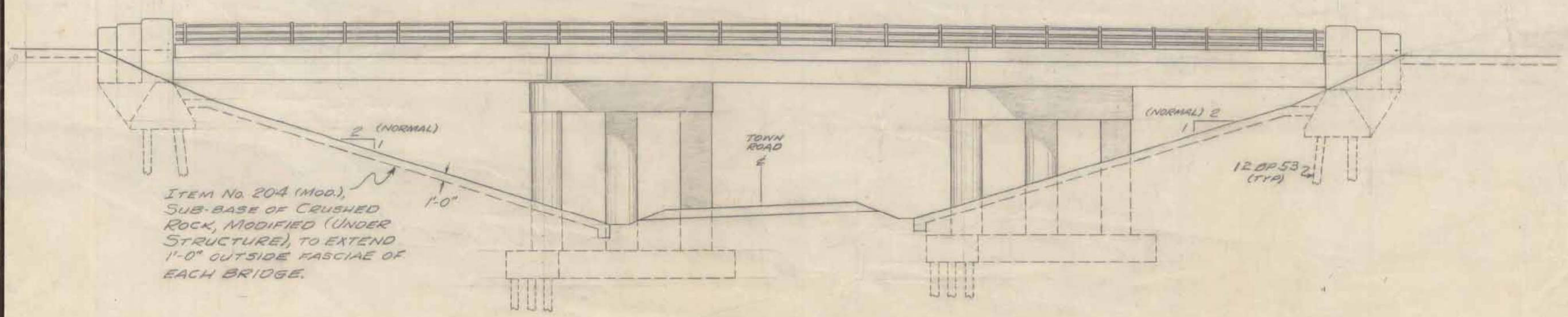
DESIGNED: L.H.S.	CHECKED: D.A.S.	DATE: 7-25-61
DRAWN: H.H.T.	IN CHARGE: H.A.C.	SCALE: 1" = 20'

PROJECT NO. I 89-2(8) SH 123 OF 241

CONTRACT NO. 4 BRIDGE SHEET 11 OF 18



PLAN
SCALE: 1 IN. = 10'-0"



ELEVATION
(N.B. BR. VIEW)
SCALE: 1 IN. = 10'-0"

Bridge Sheet No.	Control Sheet No.	INDEX OF BRIDGE SHEETS — Title
26	57	Preliminary Information Sheet
27	58	Plan and Elevation
28	59	Framing Plan and Typical Section
29,30	60,61	Boring Sheets, Location & Log
31	62	Abut. No. 1 & No. 2 Details
32	63	Abut. No. 3 & No. 4 Details
33	64	Pier No. 1 & No. 2 Details
34	65	Pier No. 3 & No. 4 Details
35	66	Approach Slab Details
36	67	Reinf. Steel Details (Superstr.)
37	68	Reinf. Steel Details (Sub-str.)
38		Std. Sh. SCB-30-60 } Superstr. Details
39		Std. Sh. SCB-D-60 } Superstr. Details
40		Std. Sh. SB-20-60 (Std. Det.)
41		Std. Sh. SB-22-60 (Exp. Joints)
42		Std. Sh. SB-5G-60 (Rail Det.)
43		Std Sh. SB-AS 15° Skew 57 {Appr. Slab

GENERAL NOTES

1. All material & contruction shall conform to the State of Vermont, Dep't. of Highways, Standard Specifications for Highway and Bridge Construction, dated Jan. 1956, and the AASHO Specifications dated 1957. Designed for H20-S16 (44) loading modified for National System of Interstate Highways, applied in accordance with the provisions of the AASHO Standard Specifications, Art. 1.2.8.
2. Concrete shall attain a minimum strength of 2000 psi prior to addition of any superimposed load.
3. All welding to conform to the American Welding Society Standard Specifications for Welded Highway and Railway Bridges.
4. All dimensions given are measured horizontally or vertically unless noted.
5. All stationing on Northbound and Southbound Lanes refers to the Base Line (℄) stationing.
6. Superstructure details to be as on Standard Sheets SCB-30-60 and SCB-D-60, modified as shown.
7. 3-Rail Bridge Railing to be as on Standard Sheets SB-5G-60, sheets 1 & 2.
8. Granite Bridge Curb (Type I) to be as shown on Standard Sheet SB-5G-60, sheet 1.
9. The contractors attention is called to the requirements for granular fill in the vicinity of bridge abutments. See the Special Provisions.
10. Where rock is encountered, no footings shall be poured until all blasting within 200 ft. has been completed.
11. All reinforcing steel shall have 3 in. clear cover, unless otherwise noted.

RICHMOND
IM BPNT (3)
SHEET 11 OF 18
BRIDGE 59

FOR REFERENCE ONLY

LIST OF BRIDGE QUANTITIES (TWO BRIDGES)

KS

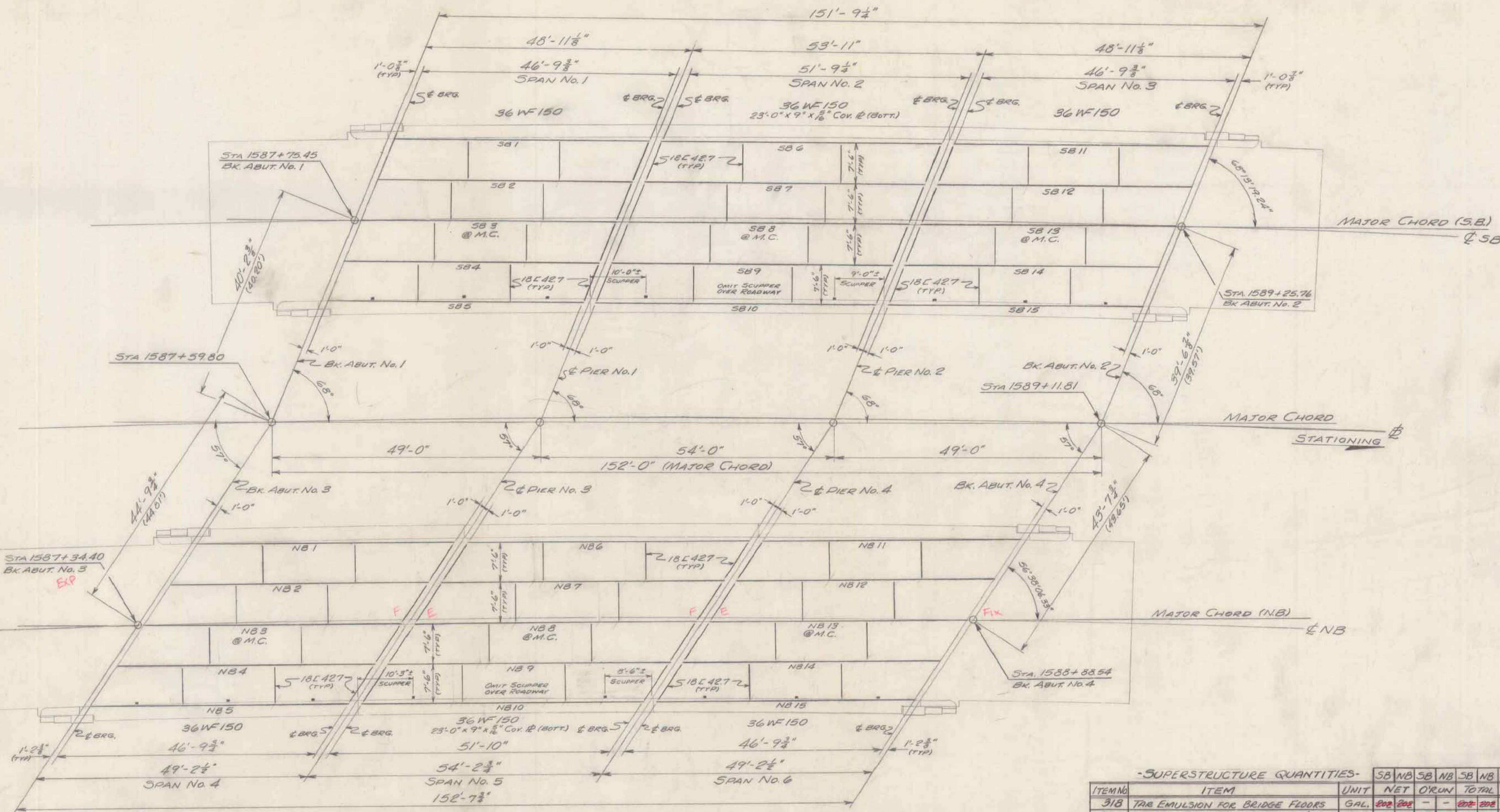
ITEM No.	ITEM	UNIT	NET	O'RUN.	TOTAL	FINAL
204	SUB-BASE OF CRUSHED ROCK, MOD. (UNDER STRUCT.)	C.Y.	~~216~~	~~22~~	~~238~~	269
222	GRAVEL BACKFILL	C.Y.	~~66~~	~~10~~	~~76~~	0
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	~~553~~	—	~~553~~	*
361-B	BITUMINOUS CONCRETE PAV'T. (MOD.)	TON	~~156~~	~~8~~	~~164~~	*
106-A	CHAN. EXCAV. OF EARTH	C.Y.				
106-B	CHAN. EXCAV. OF ROCK	C.Y.				
106-C	UNCLASS. CHAN. EXCAV.	C.Y.				
107	STRUCT. EXCAV.	C.Y.	118	~~12~~	~~130~~	118
401-B	CONC. CLASS B (MOD.)	C.Y.	~~473~~	~~24~~	~~497~~	483
402	REINF. STEEL	LBS.	~~176,046~~	—	~~176,046~~	175,403
407	ASPHALTIC-ASB. COATING	S.Y.	~~84~~	—	~~84~~	80
502-B	TREATED TIMBER PILING	L.F.				
503	SPLICES FOR STEEL PILING	EA.	~~32~~	—	~~32~~	19
504	STEEL PILING	L.F.	~~6492~~	—	~~6492~~	6,636
502-A	UNTREATED TIMBER PILING	L.F.				
401-D	CONCRETE CLASS D (MOD.)	C.Y.	~~551~~	~~29~~	~~580~~	581
403	SPIRAL REINFORCEMENT (8820#)	L.S.	1	—	1	1
404-A	STRUCTURAL STEEL	LB.	~~266,735~~	~~5333~~	~~272,068~~	263,565
501	FURNISING EQUIP. FOR DRIVING PILES	L.S.	1	—	1	1/2
556-C	GRANITE BRIDGE CURB (MOD.)	L.F.	~~653~~	—	~~653~~	678
572	BRIDGE RAILING	L.F.	~~589~~	—	~~589~~	590

* Included in Roadway Quantities KS

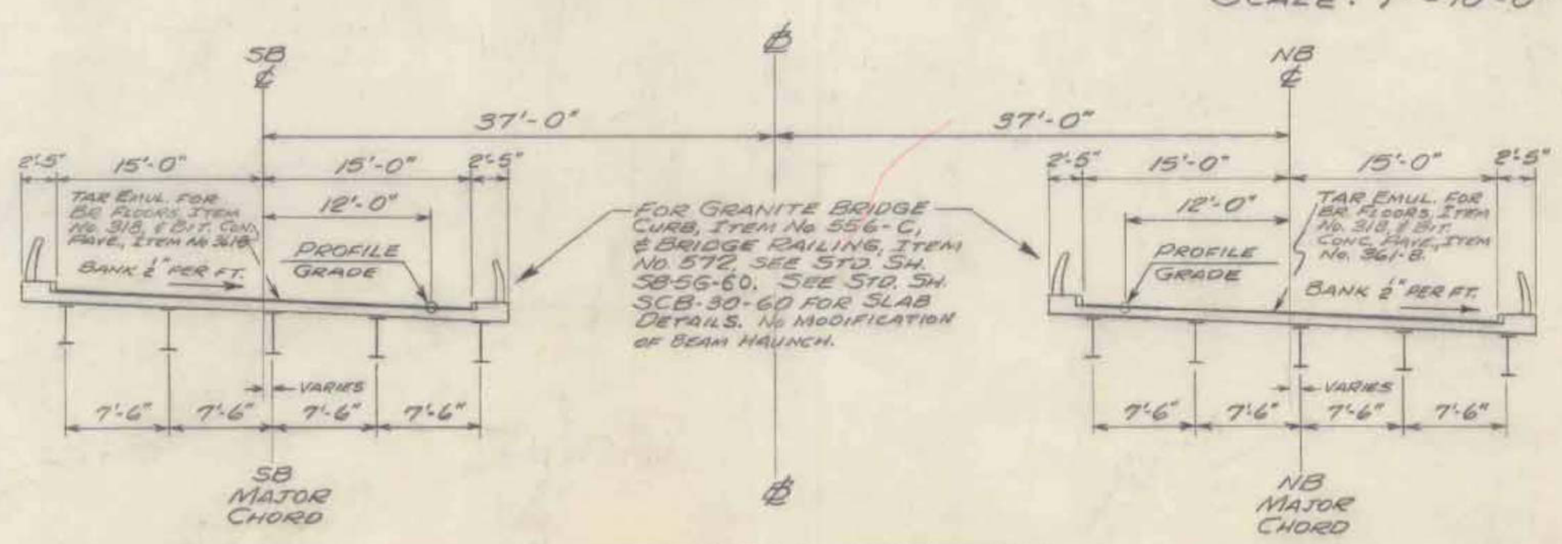
595

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF RICHMOND-WILLISTON
ROUTE NO. I 89 LOG STA.
PLAN & ELEVATION
Town Road # 8 1587+59.8
SCALE 1 IN. = 10'-0"
SURVEYED BY
DRAWN BY AHS CHECKED BY RTB
PROJECT NO. I89-2(9)
SHEET 58 OF 118 Cont #1



FRAMING PLAN
SCALE: 1" = 10'-0"



TYPICAL SECTION
SCALE: 1" = 10'-0"

NOTES:
1. All floor beams are parallel to the Major Chord of the respective bridge. The middle floor beam is at the Major Chord. All beams are 36 WF 150.
2. All diaphragms are 18 [42.7. Pier diaphragm connections to be as shown on Standard Sheet SCB-D-60, modified to fit actual skews.
3. Bearing devices to be as shown on Standard Sheet SB-20-60

RICHMOND
IM BPNT (3)
SHEET 12 OF 18
BRIDGE 59

FOR REFERENCE ONLY

-SUPERSTRUCTURE QUANTITIES-

ITEM No.	ITEM	UNIT	NET SB	NET NB	O'RUN SB	O'RUN NB	TOTAL SB	TOTAL NB	FINAL SB	FINAL NB
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	~~202~~	~~202~~	–	–	~~202~~	~~202~~	*	*
361-B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TON	~~57~~	~~57~~	~~8~~	~~8~~	~~65~~	~~65~~	*	*
403	SPIRAL REINFORCEMENT (8820#)	L.S.	1✓		–		1✓		1	
404-A	STRUCTURAL STEEL	LB.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	See Total	See Total
556-C	GRANITE BRIDGE CURB (MOD.)	L.F.	~~304~~	~~305~~	–	–	~~304~~	~~305~~	See Total	See Total
572	BRIDGE RAILING	L.F.	~~294~~	295✓	–	–	~~294~~	295✓	295	295
106-A	CHAN. EXCAV. OF EARTH	C.Y.								
106-B	CHAN. EXCAV. OF ROCK	C.Y.								
106-C	UNCLASS. CHAN. EXCAV.	C.Y.								
107	STRUCT. EXCAV.	C.Y.								
401-B	CONC. CLASS B (MOD.)	C.Y.	~~168~~	~~171~~	~~8~~	~~9~~	~~176~~	~~180~~	172	177
402	REINF. STEEL (SEE REINF. STEEL DETAILS)	LBS.								
407	ASPHALTIC-ASB. COATING	S.Y.								
502-B	TREATED TIMBER PILING	L.F.								
503	SPLICES FOR STEEL PILING	EA.								
504	STEEL PILING	L.F.								
502-A	UNTREATED TIMBER PILING	L.F.								

AHS

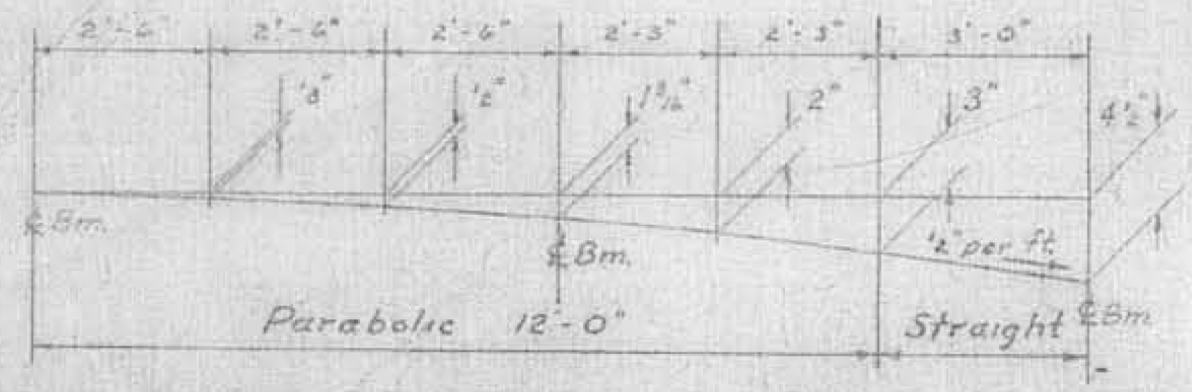
* Included in Roadway Quantities AB

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

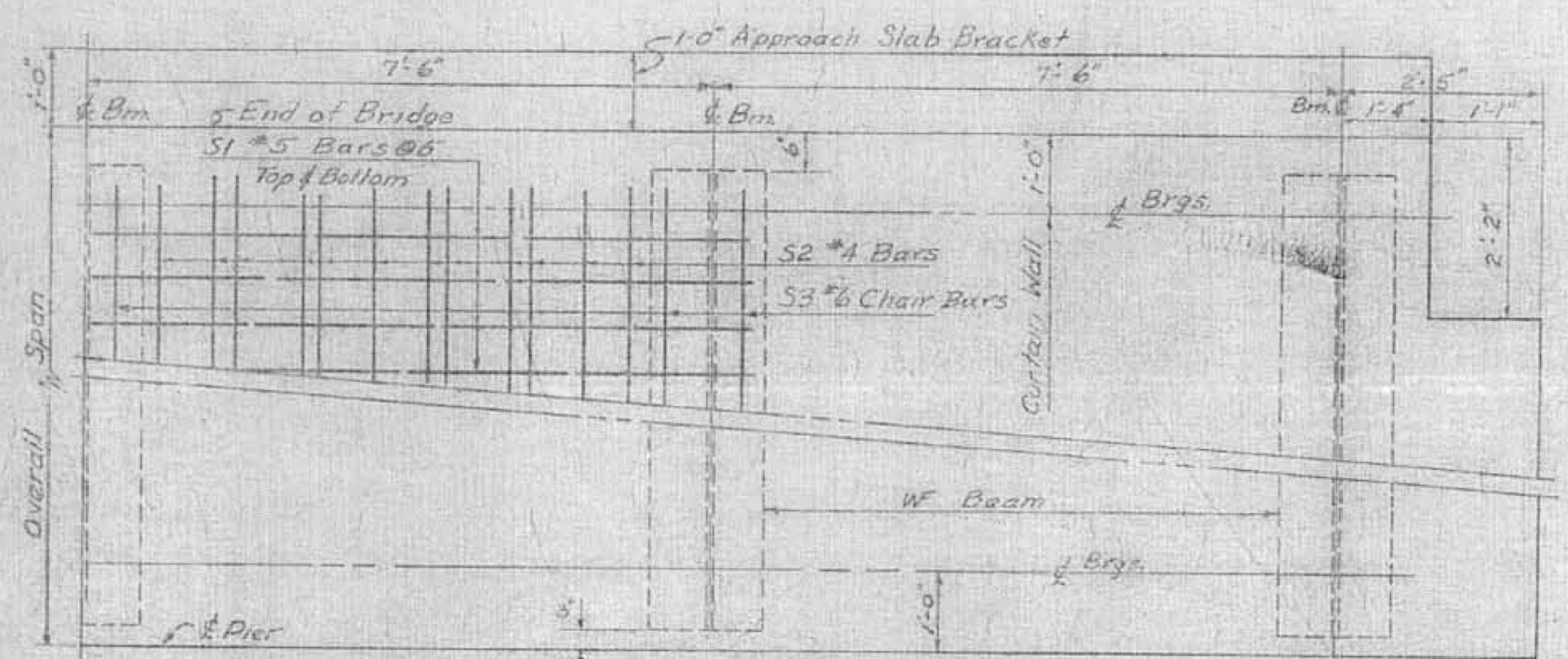
TOWN OF RICHMOND-WILLISTON
ROUTE No. I 89 LOG STA.
FRAMING PLAN & TYPICAL SECTION
SCALE AS NOTED
SURVEYED BY
DRAWN BY AHS CHECKED BY BTB
PROJECT No. I 89-2(9)
SHEET 59 OF 118 Cont #1

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

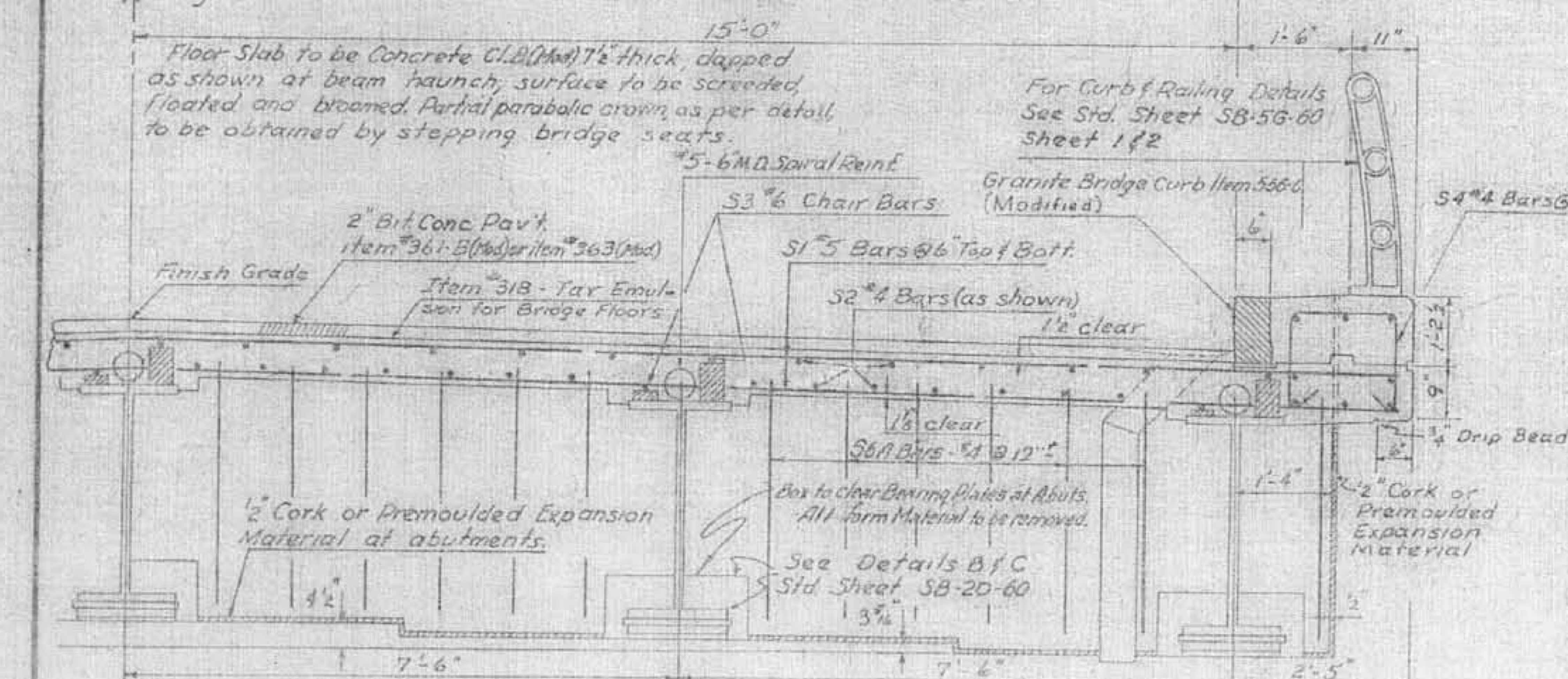
Span, Out to Out	99-0	94-0	89-0	84-0	79-0	74-0	69-0	64-0	59-0	54-0	49-0	44-0	39-0	34-0
Span, ℄ to ℄ Brngs.	97-0	92-0	87-0	82-0	77-0	72-0	67-0	62-0	57-0	52-0	47-0	42-0	37-0	32-0
Length of Bms.	98-0	93-0	88-0	83-0	78-0	73-0	68-0	63-0	58-0	53-0	48-0	43-0	38-0	33-0
Size WF Beam	36WF300	36WF300	36WF300	36WF245	36WF194	36WF170	36WF160	36WF150	36WF150	36WF150	36WF150	36WF150	33WF130	30WF116
Lgth. & Size Bot. Cover ℞	66'-9" 19"×1 5/16"	55'-8" 19"×1"	52'-8" 14"×1"	51'-10" 14"×1"	54'-0" 14"×1 1/4"	51'-9" 14"×1"	46'-3" 13"×7/8"	39'-6" 10"×7/8"	32'-6" 10"×1/2"	23'-0" 9"×5/16"	—	—	—	—
" " " Top " "	63'-6" 12"×1/2"	—	—	—	—	—	—	—	—	—	—	—	—	—
Dead load Deflection	3"	2 3/4"	2 3/8"	2 1/4	1 7/8"	1 1/2"	1 1/4"	1"	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 @ 6"	Double @ 5 1/2	Double @ 5	Double @ 5	Double @ 5	Double @ 5	Double @ 5 1/2	Double @ 5 1/2	Double @ 5 1/2	"	"	
" " 10'-20' or ½ Span	Double @ 6 1/2	Double @ 6 1/2	Double @ 7"	Double @ 6 1/2	Double @ 6"	Double @ 6 1/2	Double @ 6 1/2	Double @ 6 1/2	Double @ 7"	Double @ 7 1/2	Double @ 8"	"	"	
" " 20'-30' or ½ Span	4 1/2	4"	4 1/2	4"	4 1/2	4 1/2	4 1/2"	5"	5 1/2"	6"	6 1/2	"	"	
" " 30'-40' or ½ Span	5 1/2	5 1/2	5 1/2	5 1/2	6"	6"	7"	7 1/2"	—	—	—	"	"	
" " 40'-½ Span	7"	7"	8"	8"	—	—	—	—	—	—	—	"	"	
Length of 3/4"⌀ Studs (Alternate to Spirals)	(2 Studs required per pitch. 6 1/2" long unless otherwise specified on the plans)											Non	Composite	
Tot. Struct. Steel (1 span) (lbs.)	192,860	169,900	156,410	123,370	99,000	82,950	69,500	59,080	52,070	46,560	41,610	37,780	28,150	22,190
Reinforcing Bars - S1	396	376	356	336	316	296	276	256	236	216	196	176	156	136
" " - S2	192	192	192	192	192	192	192	128	128	128	128	128	128	64
" " - S3	30	30	30	30	30	30	30	20	20	20	20	20	20	10
" " - S4	128	120	114	108	100	94	88	80	74	68	60	54	48	40
" " - 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)	21,570	20,530	19,520	18,480	17,450	16,440	15,400	14,220	13,190	12,170	11,140	10,120	9070	7,900
Approx. wt. Spiral Reinf. (lbs)	2,550	2,520	2,280	2,370	2,320	2,190	2,090	1,960	1690	1550	1430	Non	Composite	
Tot. Cu.Yds. Conc. Class B (Mod) (Cu.yds)	116	111	106	101	95	90	85	79	73	68	63	58	51	45
Tot. Wt. Bitum. Conc. Pav't (Mod) (Tons)	42	40	38	36	34	32	29	27	25	23	21	19	17	15
Tar Emulsion for Bridge Floors (Gals.)	132	125	119	112	105	99	92	85	79	72	65	59	52	45
Approx. Quantity 3/4"×6 1/2" Studs	3000	2900	2600	2700	2700	2500	2400	2250	1990	1810	1660	Non	Composite	



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



HALF PLAN



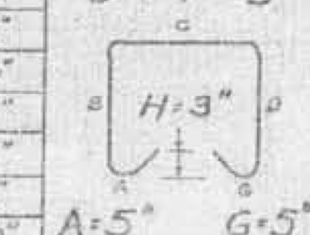
TYPICAL HALF SECTION

REINFORCING STEEL SCHEDULE

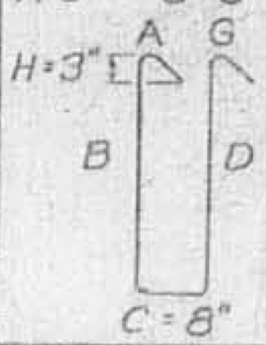
S1 - #5 34'-4" Straight | S5 - #5 32'-2" Straight

Span	S2 - #4 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"

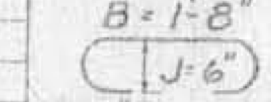
S4 - #4
T.L. = 5'-3"
B = 1'-6"
D = 1'-6"
C = 1'-5"



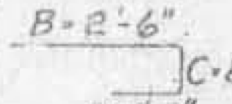
S6A - #4
T.L. Varies
A = 5" G = 5"



S7 - #6
T.L. = 3'-0"
B = 1'-8"



S6P - #5
T.L. = 4'-2"



RICHMOND
IM BPNT (3)
SHEET 13 OF 18
ALL BRIDGES

FOR REFERENCE ONLY

Revisions & Corrections
Changed To 12" Curb 9/7/60

Drawn By: R.S.H. June 1960
Traced By: R.S.H. June 1960
Checked By: R.T.B. & R.S.H. July 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
30 FOOT ROADWAY WF BEAM BRIDGES

34-44 NON COMPOSITE, 49-99 COMPOSITE

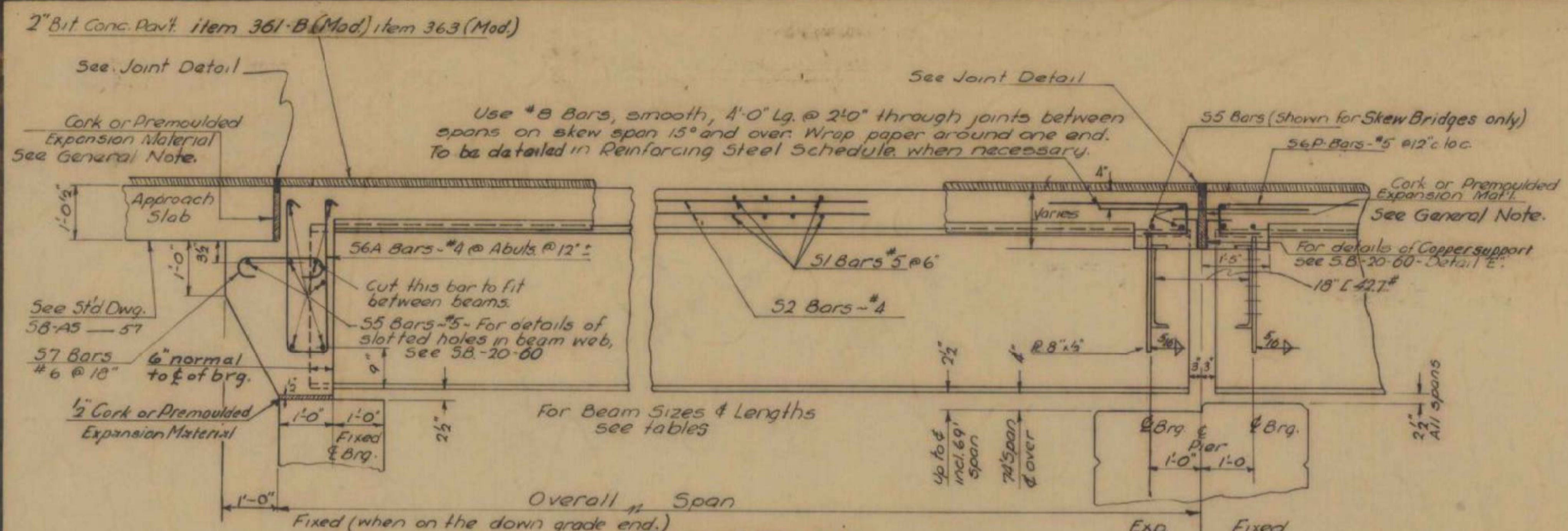
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

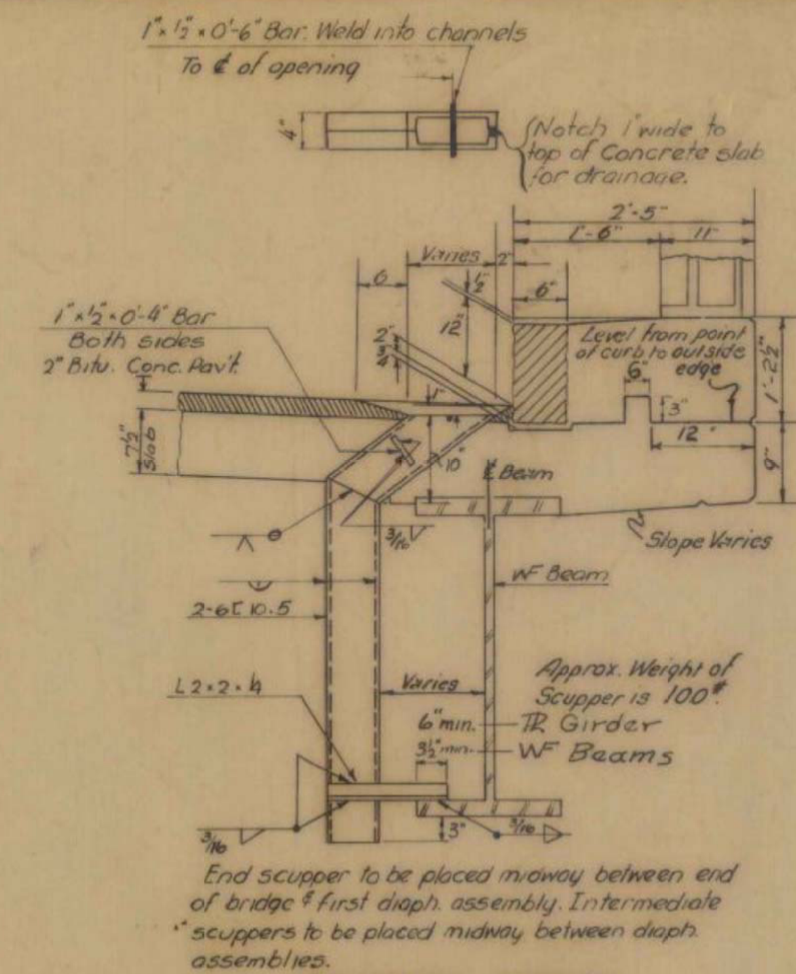
Void
Reprinted for photographing July 1962

SCB-30-60

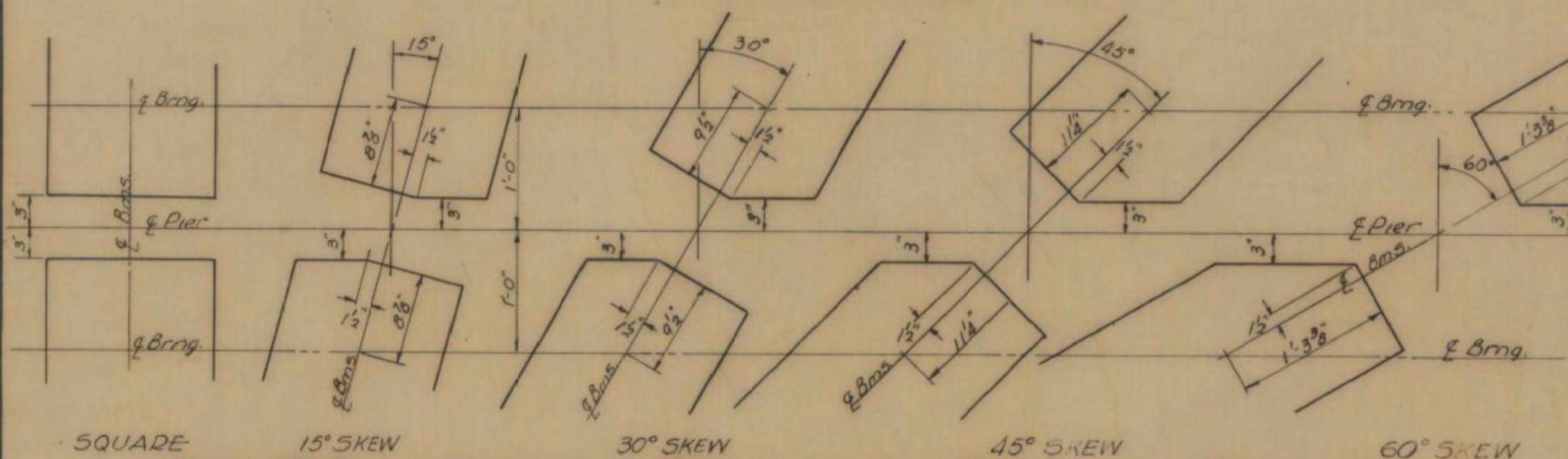
258 G



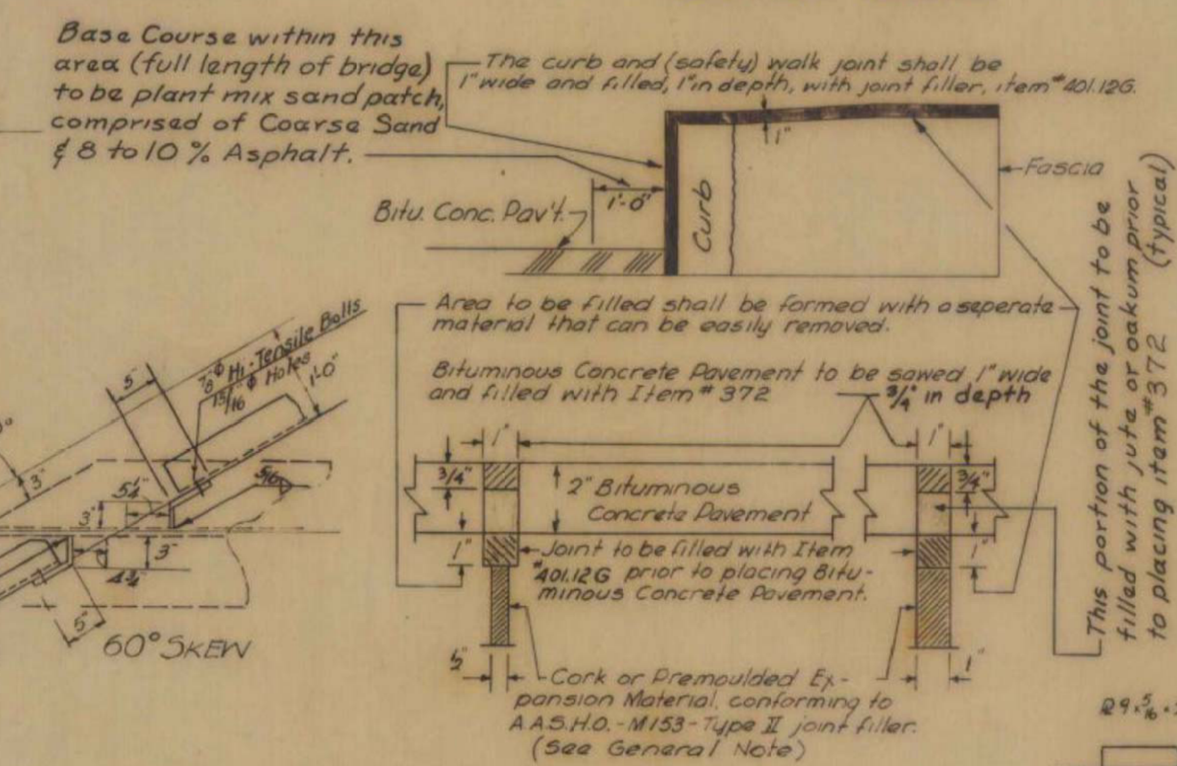
ELEVATION

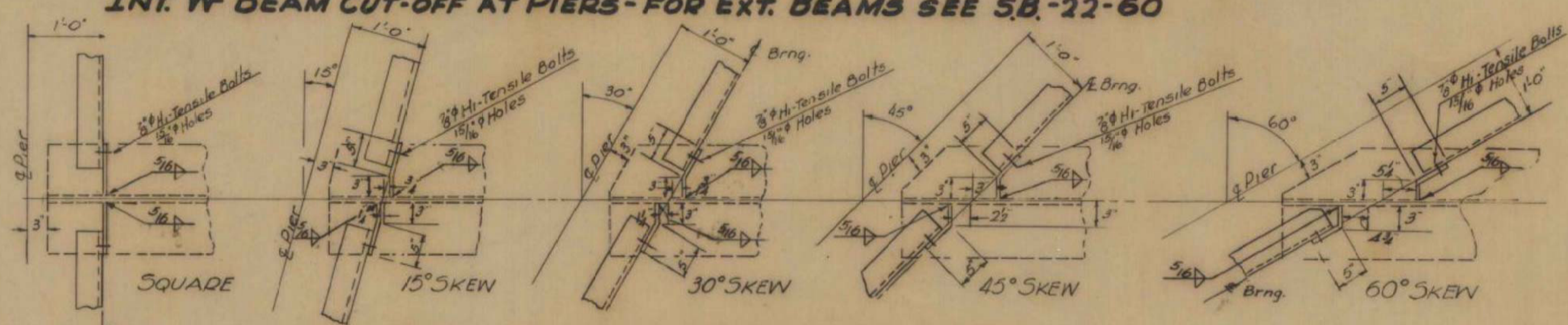


SCUPPER DETAIL



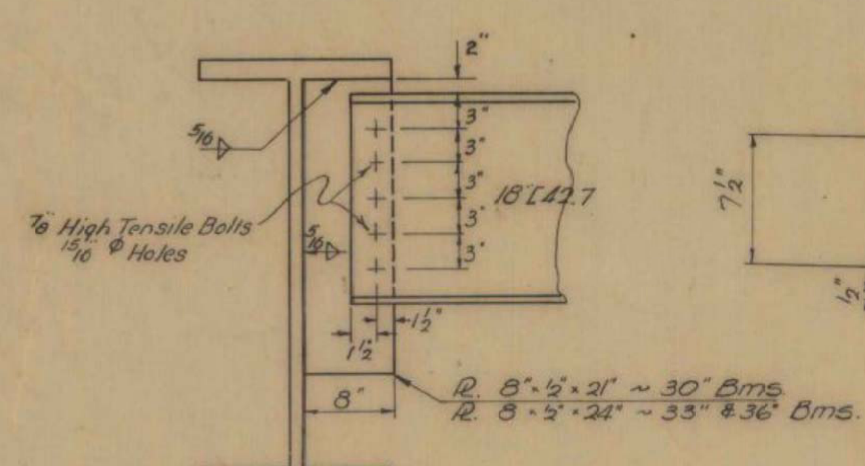
INT. WF BEAM CUT-OFF AT PIERS - FOR EXT. BEAMS SEE S.B.-22-60



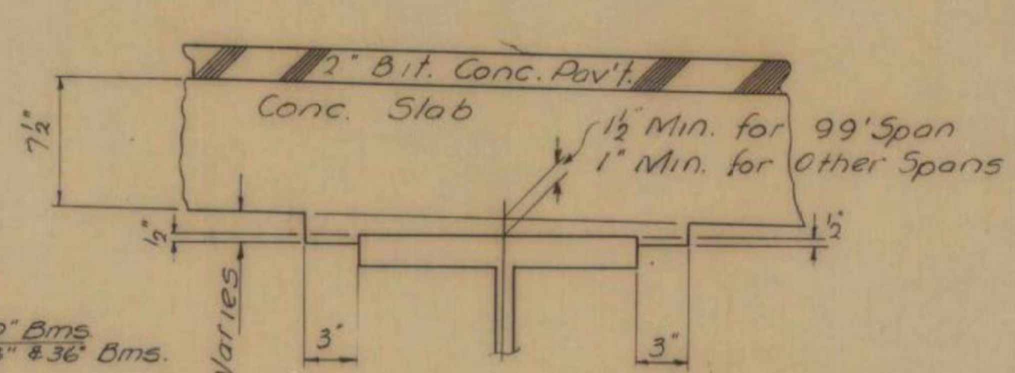


DETAIL OF PIER DIAPHRAGM CONNECTIONS

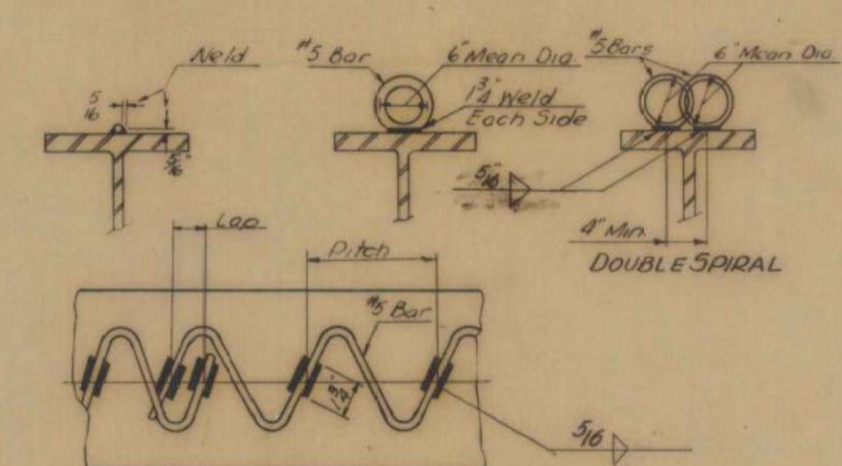
JOINT DETAIL



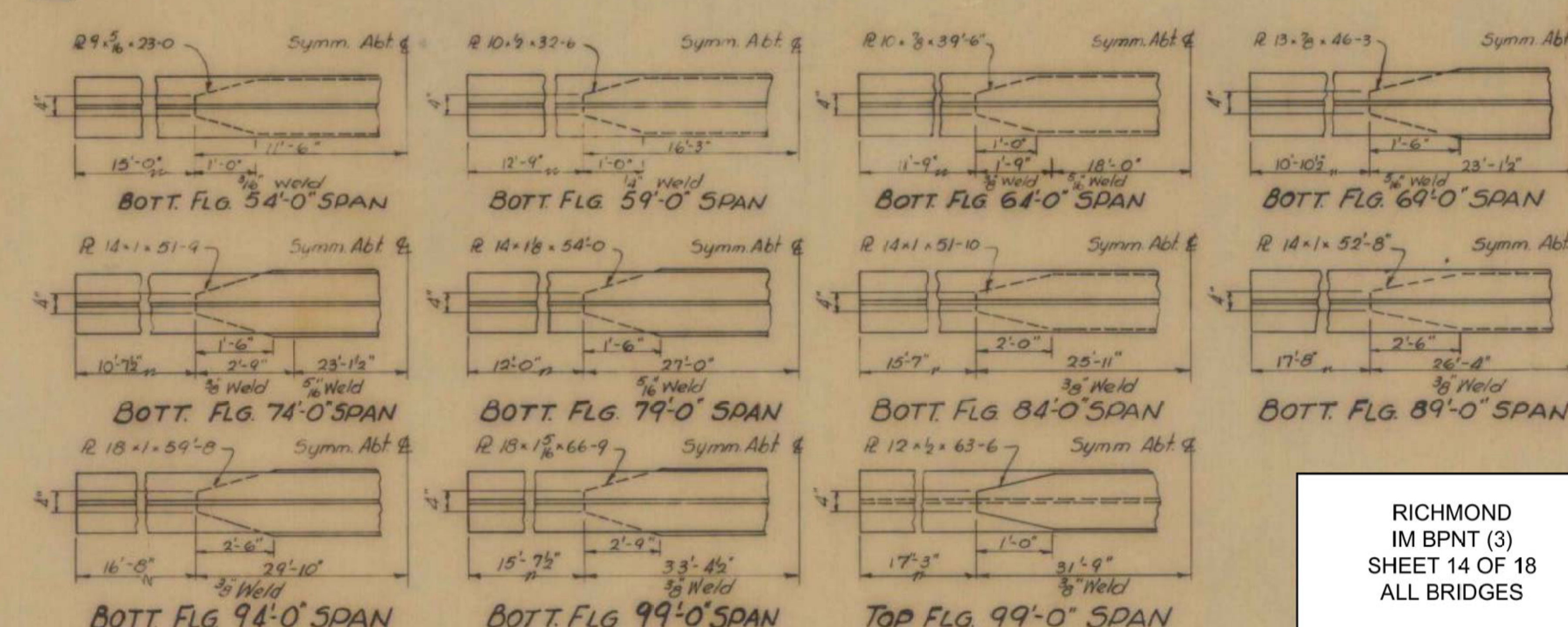
DETAIL OF DIAPHRAGM ASSEMBLY AT PIERS



DETAIL OF BEAM HAUNCH



SPIRAL WELDING DETAIL



GENERAL NOTES

The final coat of field paint shall be green, unless otherwise directed by the Engineer.

Quantities given in accompanying standards are for a single span, square bridge. These quantities include the following overruns:- Concrete-5%; Structural Steel-2%; Bituminous Concrete Pavement-15%.

For skewed bridges:- transverse bars shall be furnished as for square spans; bars shall be cut in the field to fit skewed end and cut-off bars used at opposite end of span; the 55 bars shall be lengthened and the number of 56A and 57 bars increased; the 56P bars are to be used at piers only; increase the beam lengths as indicated on this sheet and S.B.-22-60; for variation in treatment of cut-off for interior and exterior beams see details on this sheet and standard S.B.-22-60.

All materials and construction shall conform to the State of Vermont, Department of Highways, Standard Specifications for Highway & Bridge Construction, dated January 1956, and the A.A.S.H.O. specifications date 1957. Design is for H20-S16-44 loading modified for National System of Interstate Highways, applied in accordance with the provisions of the A.A.S.H.O. Standard Specifications Article 1.2.8.

For location of fixed and expansion bearings, see the Contract Plans. In general the fixed end bearing device is on the down grade end of the span. For details of bearing devices, see standard S.B.-20-60, detail "C".

Diaphragms shall be 15" [33.9# for 30" beams and 18" [42.7# for 33" and 36" beams. On skewed spans, the diaphragms shall be spaced at equal intervals between adjacent beams. For details of diaphragms, see standard S.B.-20-60 detail "F" or "G".

The welding of cover plates shall be done in such a manner that no internal stresses are introduced into the beam flanges. When a cover plate is wider than a beam flange, the weld is to be omitted one inch (1") either side of the intersection of the cover plate and the edge of the beam flange. All welds on cover plates shall be continuous fillets of size noted.

Scuppers are to be omitted over roadways and sidewalks under a bridge; place the scuppers a minimum of 2'-0" outside of shoulder or back of sidewalk, but not within 4'-0" of face of Abutment or Pier. On Superelevated bridges, scuppers are placed on the low side only. Payment for scuppers shall be under item #404-Steel.

All exposed edges of concrete shall be chamfered 1"x1" unless otherwise indicated on the plans.

All construction joints to be made as indicated on standard S.B.-20-60, details "H" & "K" unless othewise noted.

Details off shear connectors shall be submitted to the State for approval. Either channel or stud connectors may be substituted for the designed spiral steel. The studs shall be substituted on the basis of two (2) 3/4" studs for each pitch of a 5/8" ⌀ spiral.

Abutments (fixed end) use 1/2" expansion material. Abutments (expansion end) & piers; for temperatures less than 60°F, use 1" thick expansion material, & for temperatures over 60°F, use 1/2" thick expansion material. Expansion material to be as noted on this sheet or as indicated on SB-20-60.

After the superstructure steel has been erected, beam profiles shall be taken under the direction of the engineer to determine the final grade.

Unless otherwise called for, beams shall be cambered to the minimum camber likely to remain permanent as indicated in the A.I.S.C. Handbook. The camber shall approximate a simple regular curve from end to end of beam. Tolerances in camber shall be as indicated in the A.I.S.C. Handbook.

RICHMOND
IM BPNT (3)
SHEET 14 OF 18
ALL BRIDGES

FOR REFERENCE ONLY

Revisions & Corrections	
Changed To 12" Curb	9/7/60
Corrected Elev. View	9/26/60
Added Joint Detail & Exp. Mat. Note	12/2/60
Corrected Joint Filler to item 372	3/8/61
Changed General Notes	6-23-61

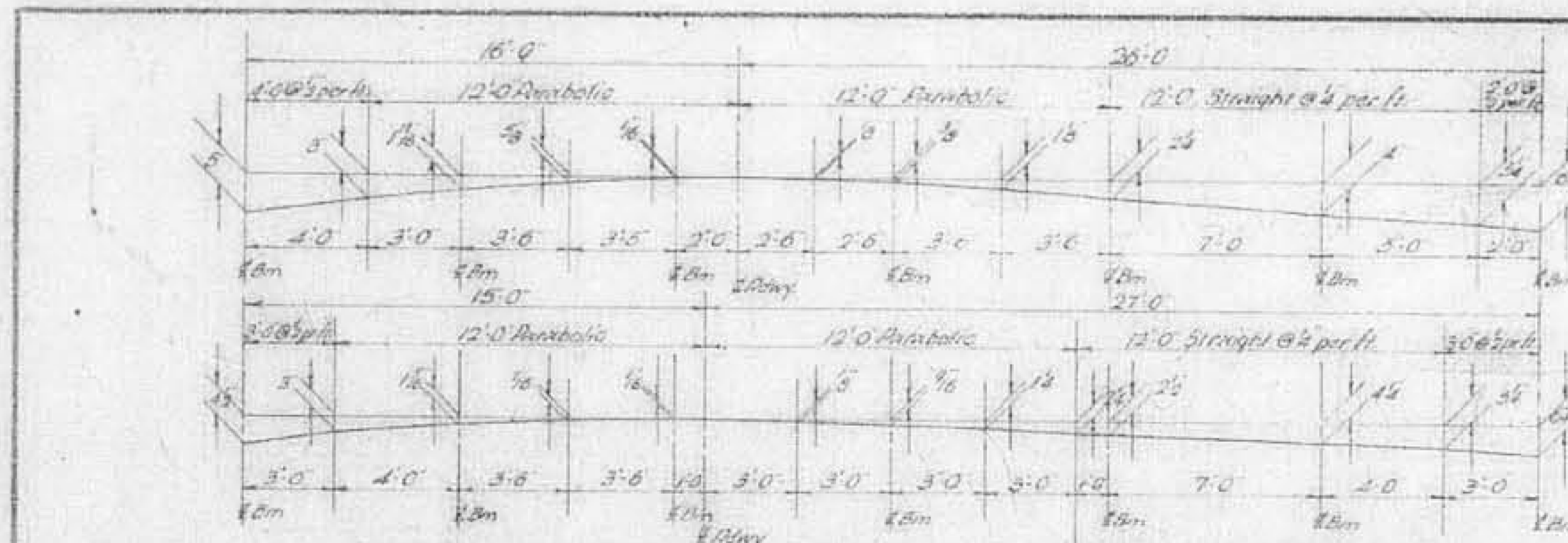
Drawn By: H.W.S. June 1960
Traced By: H.W.S. June 1960
Checked By: R.T.B. & R.S.H. June 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

DETAILS OF WF BEAM BRIDGES
34' TO 44' NON COMPOSITE ~ 49' TO 99' COMPOSITE

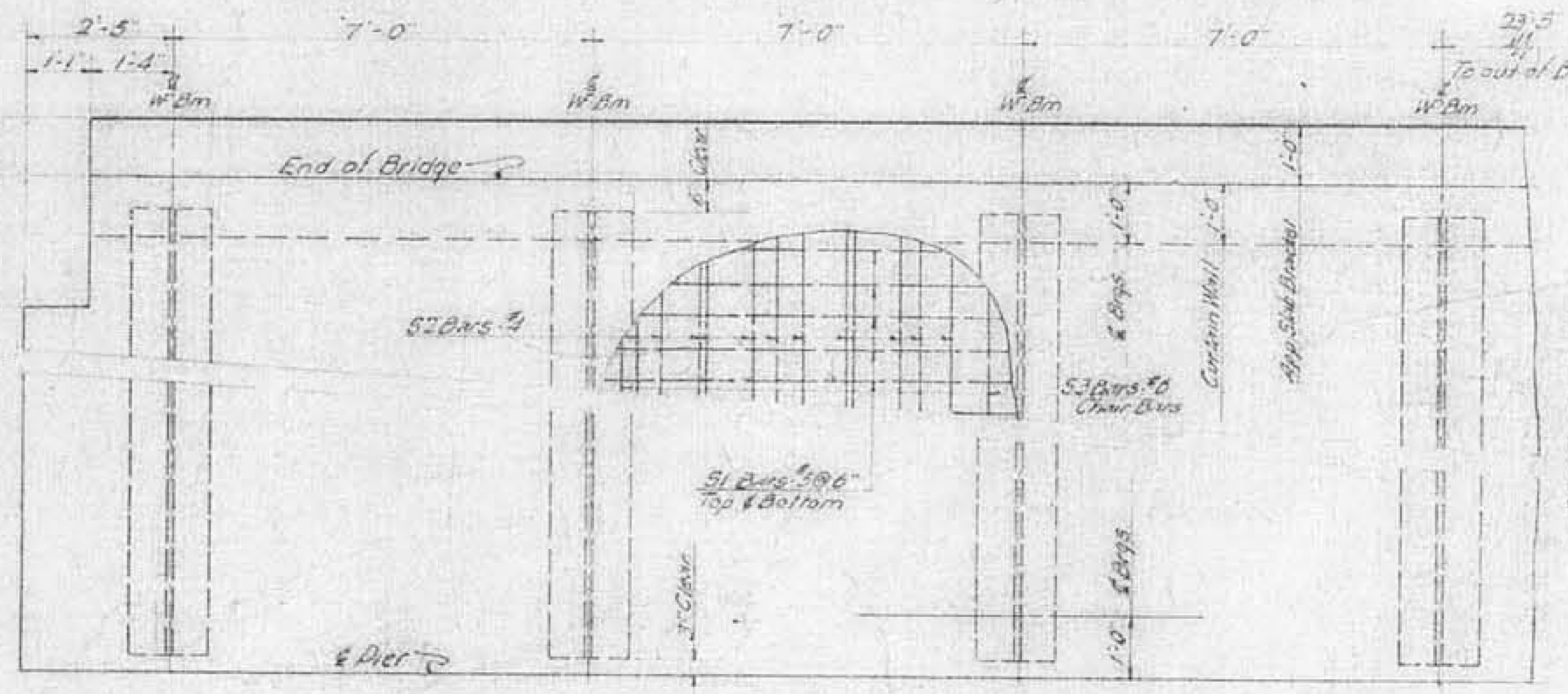
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-D-60

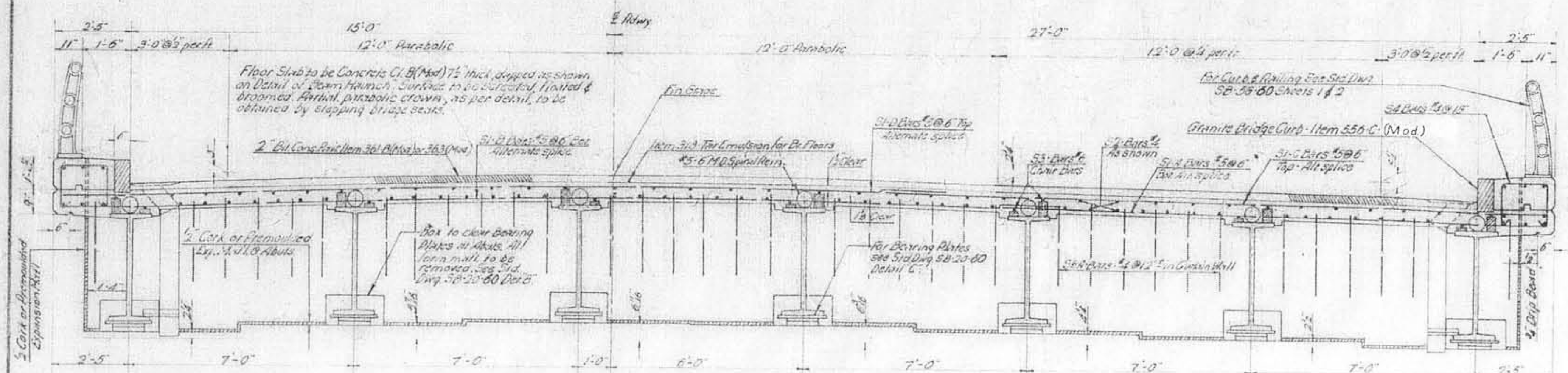
REPRINTED 5 DEC 61



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



PARTIAL PLAN



TYPICAL SECTION (LONG STRUCTURE)

TABLE OF QUANTITIES FOR SINGLE (SQUARE) SPAN

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	36WF300	36WF300	36WF300	36WF245	36WF194	36WF170	36WF160	36WF150	36WF150	36WF150	36WF150	36WF150	33WF130	30WF116
Lgth. & Size Bot. Cover Pl.	68'-9" Lg. 18x1 1/16	59'-8" Lg. 18x1	52'-8" Lg. 14x1	51'-10" Lg. 14x1	54'-0" Lg. 14x7/8	51'-9" Lg. 14x1	46'-3" Lg. 13x7/8	39'-6" Lg. 10x7/8	32'-8" Lg. 10x1/2	23'-0" Lg. 9x5/16	—	—	—	—
Lgth. & Size Top Cover Pl.	63'-6" Lg. 12x1/2	None										—	—	—
Dead Load Deflection	3"	$2\frac{3}{4}$"	$2\frac{3}{8}$"	$2\frac{1}{8}$"	$1\frac{7}{8}$"	$1\frac{1}{2}$"	$1\frac{1}{4}$"	1"	$\frac{7}{8}$"	$\frac{5}{8}$"	$\frac{1}{2}$"	$\frac{3}{8}$"	$\frac{1}{4}$"	$\frac{1}{4}$"
Diameter of Spiral Bars	$\frac{5}{8}$"											Non Composite		
Mean Diameter of Spiral	6"											"	"	
Spiral Pitch 0'-10' From Brng.	Double @ 5½"	Double @ 5½"	Double @ 6"	Double @ 5½"	Double @ 5"	Double @ 5"	Double @ 5	Double @ 5	Double @ 5½	Double @ 5½	Double @ 5½	Non Composite		
" " 10'-20' or ℄ Span	Double @ 6½"	Double @ 6½"	Double @ 7"	Double @ 6½"	Double @ 6	Double @ 6½"	Double @ 6½	Double @ 6½	Double @ 7	Double @ 7½	Double @ 8	"	"	
" " 20'-30'	4½"	4"	4½"	4"	4½"	4½"	4½"	5"	5½"	6"	6½"	"	"	
" " 30'-40'	5½"	5½"	5½"	5½"	6	6"	7"	7½"	—	—	—	"	"	
" " 40'-℄ Span	7"	7"	8"	8"	—	—	—	—	—	—	—	"	"	
Lgth. of ¾"ø Studs (Alt. to Spirals)	6½" Long unless otherwise specified on the Plans. 2 Studs required per Pitch											"	"	
Total Struct. Steel (1 Span) (lbs)	269,740	237,590	218,700	172,520	138,420	115,910	97,140	82,550	72,740	65,010	58,080	52,730	39,290	30,930
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	264	264	264	264	264	264	264	176	176	176	176	176	176	88
" " S3	42	42	42	42	42	42	42	28	28	28	28	28	28	14
" " S4	128	122	114	108	102	94	88	82	74	68	62	54	48	42
" " S5	32	32	32	32	32	32	32	32	32	32	32	32	32	32
" " S6A	76	76	76	76	76	76	76	76	76	76	76	76	76	76
" " S7	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Total Weight Reinf. Bars (lbs)	30,140	28,710	27,290	25,840	24,400	22,980	21,530	19,900	18,460	17,030	15,600	14,160	12,710	11,080
Approx. Weight Spiral Reinf. (lbs)	3,570	3,530	3,180	3,310	3,250	3,070	2,920	2,740	2,600	2,360	2,170	Non Composite		
Total Concrete Class B (Cu. yds)	151	144	137	131	124	117	110	103	95	89	82	75	67	59
Total Weight Bitum. Conc. Pavt. (Tons)	59	56	53	50	47	44	41	38	35	32	29	26	23	20
Tar Emulsion for Bridge Floors (Gals.)	185	176	166	157	148	138	129	120	110	101	92	82	73	64
Approx. Quantity ¾" x 6½" Studs	4,150	4,050	3,650	3,800	3,750	3,500	3,300	3,100	3,000	2,700	2,500	Non Composite		

REINFORCING STEEL SCHEDULE

S1-A	#5	17'-3"	Straight	S1-B	#5	31'-3"	Straight
S1-C	#5	20'-9"	Straight	S1-D	#5	27'-9"	Straight
S5	#5	23'-3"	Straight				

Span	S2 - #4 Straight Length	S3 - #6 Straight 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'-3"
B = 1'-6"
D = 1'-6"
C = 1'-5"
H = 3"
A = 5" G = 5"

S6A - #4
T.L. Varies
A = 5 G = 5
H = 3"
C = 8"

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

S6D = #5
T.L. = 4'-2"
B = 2'-6"
C = 8"
D = 1'-0"

Revisions & Corrections
Changed To 12" Curb 9/7/60

Drawn By: A.B.M. 6-17-60
Traced By: A.B.M. 6-17-60
Checked By: R.T.B. & R.S.H. July 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
42 FOOT ROADWAY WF BEAM BRIDGES

34-44 NON COMPOSITE, 49-99 COMPOSITE

FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

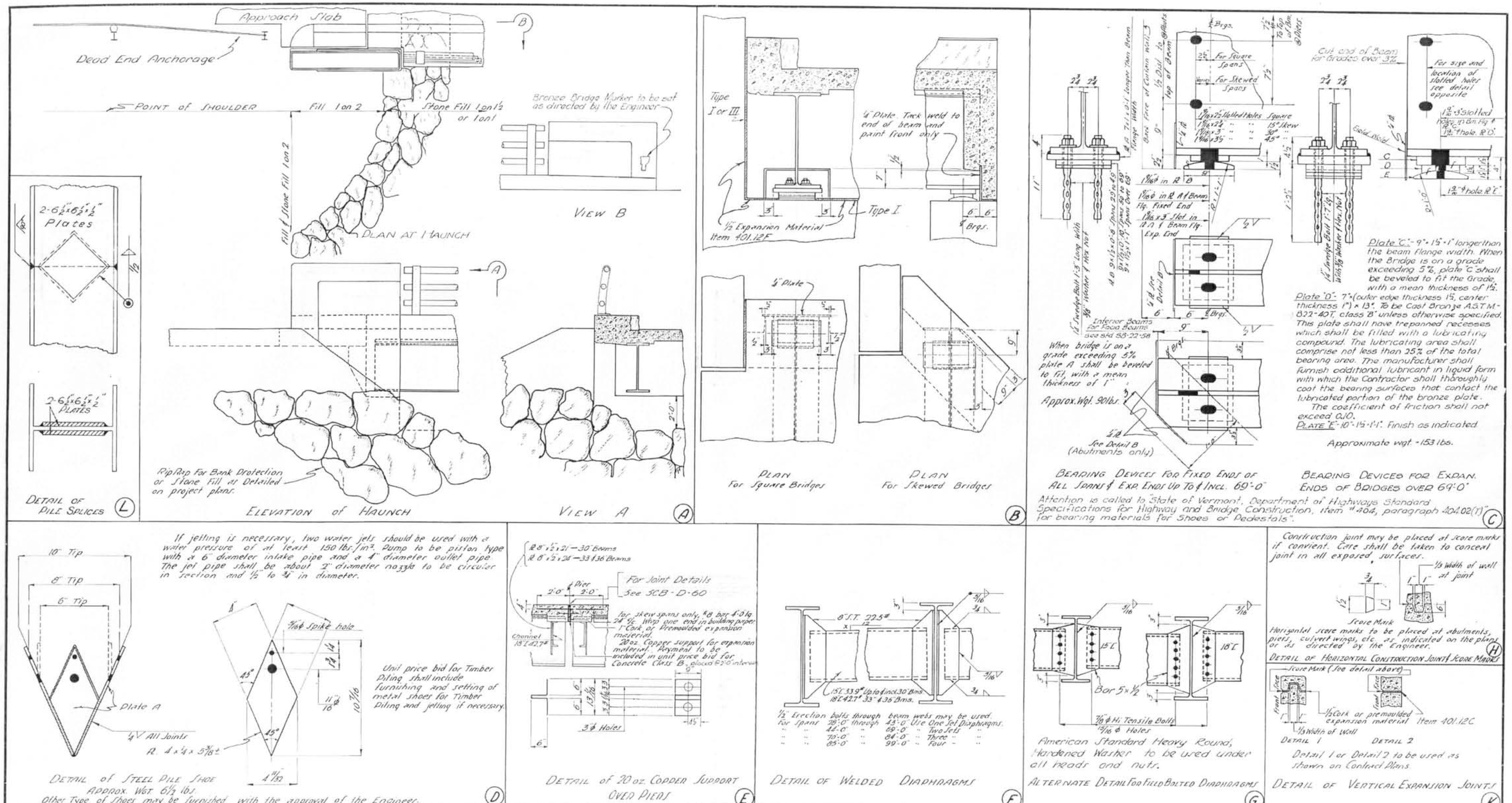
DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

RICHMOND
IM BPNT (3)
SHEET 15 OF 18
ALL BRIDGES

FOR REFERENCE ONLY

SCB-42-60

269A



REVISIONS ∮ CORRECTIONS

Revised July 1962

DRAWN BY L.M. Bjorn 2-56
TRACED BY A.B. MacDougal 3-56
CHECKED BY J.L. Hibbard 3-56

CORRECT 13 July 1960
L.M. Bjorn
BRIDGE ENGINEER

APPROVED 13 July 1960
[signature]
CHIEF ENGINEER

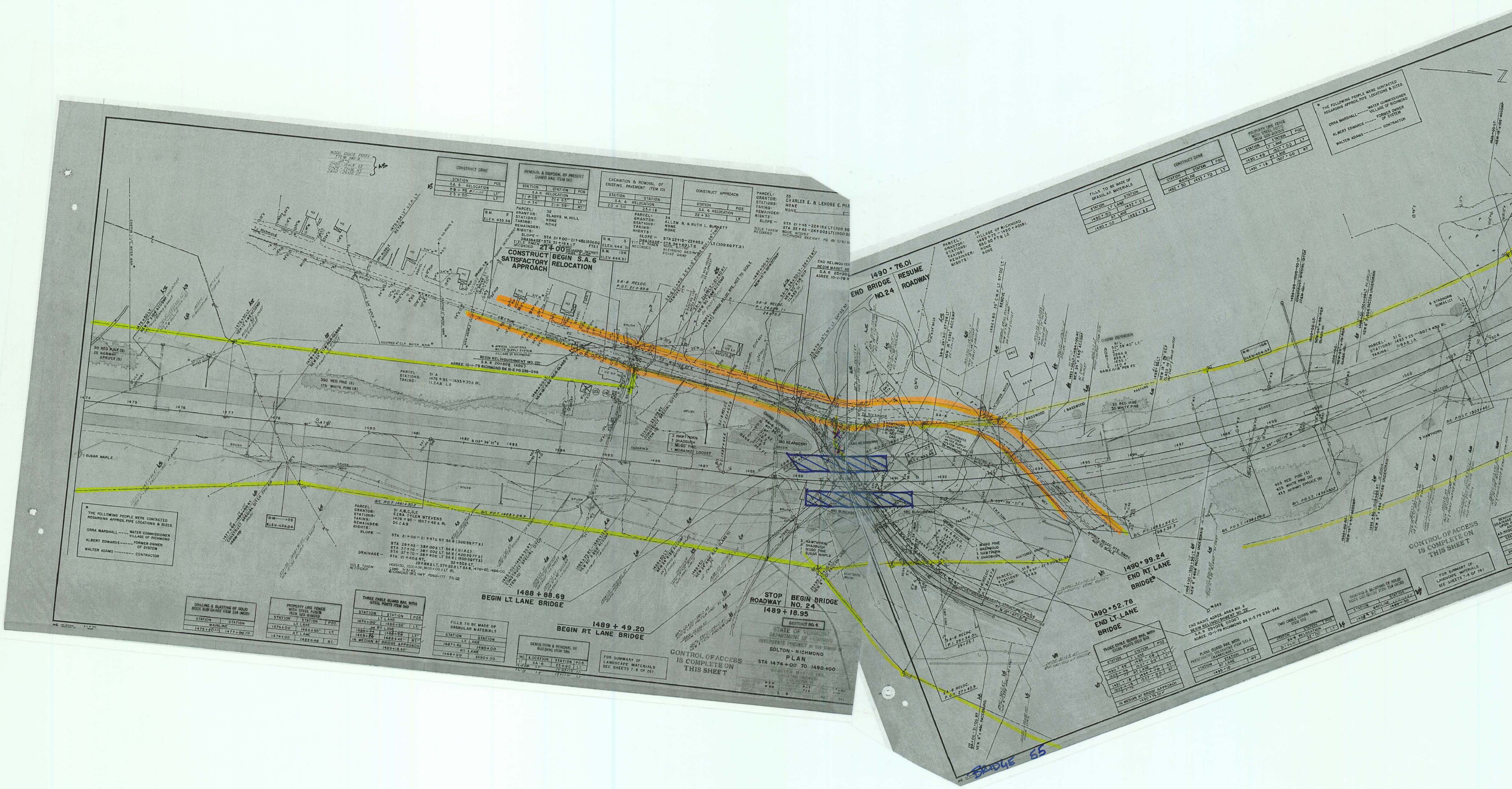
CONSTRUCTION DETAILS FOR WF BEAM BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

RICHMOND
IM BPNT (3)
SHEET 16 OF 18
ALL BRIDGES

FOR REFERENCE ONLY

SB-20-60



RICHMOND
IM BPNT (3)
SHEET 17 OF 18
BRIDGE 55

FOR REFERENCE ONLY

RICHMOND
IM BPNT (3)
SHEET 18 OF 18
BRIDGES 56, & 59

FOR REFERENCE ONLY