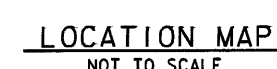


TOWN OF RICHMOND
COUNTY OF CHITTENDEN
BRIDGES NO. 55 N&S, 56 N&S, AND 59 S ON I-89

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



BUILT AS DESIGNED

VHR *Vanasse Hangen Brustlin, Inc.*

CONTRACTOR AMSTAR OF WESTERN 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 CONSTRUCTION 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

SHEET 1 OF 18 SHEETS

[illegible]

Town Of RICHMOND		Bridge No. 55,56,59	
Highway No. 1-89 N&S		Log Sta.	
		Surv. Sta.	
1-89 N&S			
QUANTITY SHEET			
Designed By C.L. CILLEY		Drawn By C.L. CILLEY	
Checked By Date 11/09		Bridge Design Supervisor Date 11/09	
PROJECT RICHMOND		PROJECT NO. IM BPNT (3)	
I.G.C. Info.			
Bridge Sheet No. Z08A2060S		Sheet 2 of 18	

PROJECT NOTES:

GENERAL

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION, 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS.
- 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.
- 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 649.5I GEOTEXTILE FOR SILT FENCE AND 653.20 TEMPORARY EROSION MATTING TO PREVENT EROSION AND CONTROL SEDIMENT FROM THE STAGING AREAS.
- 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).
- 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

- 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.
- 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

- THE TRAFFIC CONTROL PLANS SHALL SHOW ALL RAMPS AND I-89 ACCELERATION AND DECELERATION LANES AT EXIT 11.
- UNIFORMED TRAFFIC OFFICERS ARE REQUIRED FOR THE TRAFFIC CONTROL DESIGN ON I-89.
- 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

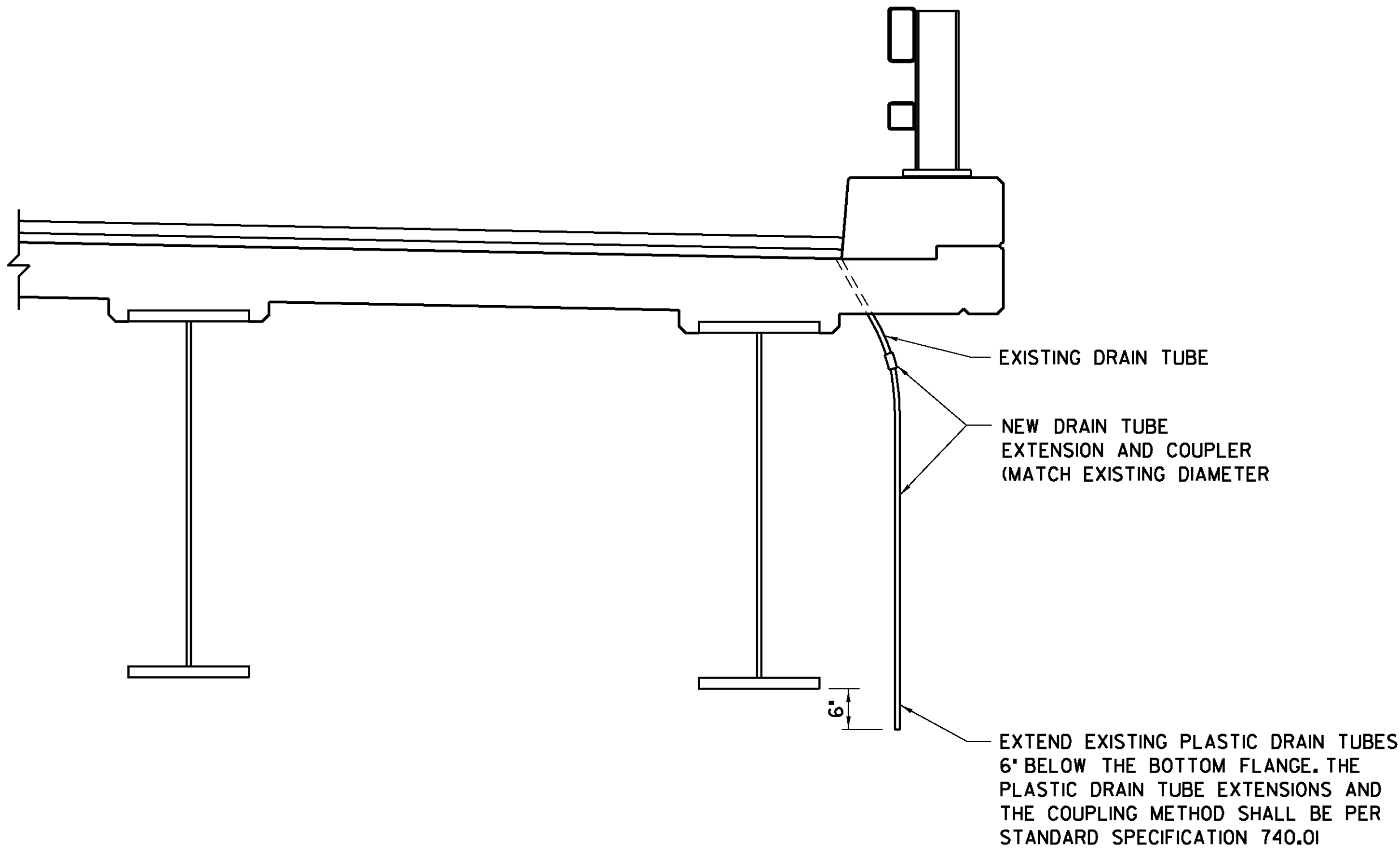
I-89 SOUTHBOUND

• 3PM-7PM MONDAY-THURSDAY

• 2PM-7PM FRIDAY
- 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.
- 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.
- 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.
- SEE SPECIAL PROVISIONS FOR PROJECT SCHEDULE BASED ON COORDINATION WITH OTHER I-89 CONSTRUCTION PROJECTS.

UTILITIES

- REFER TO UTILITIES SPECIAL PROVISIONS.



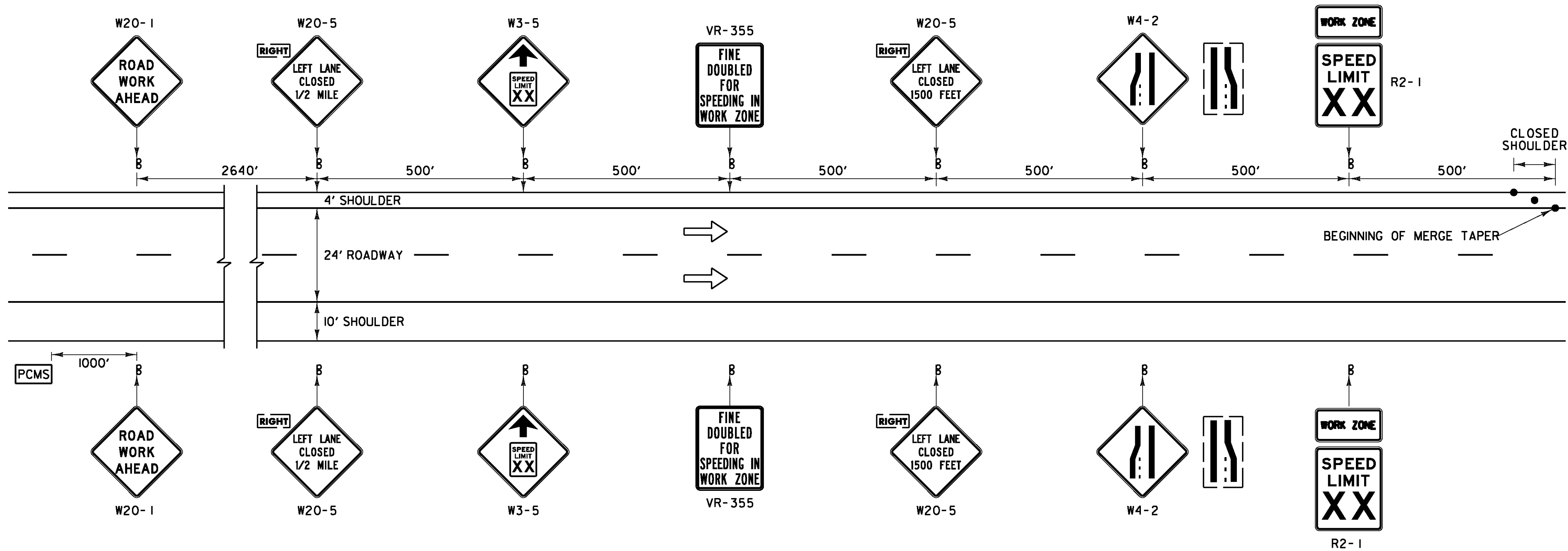
DRAIN TUBE EXTENSION DETAIL

NOT TO SCALE

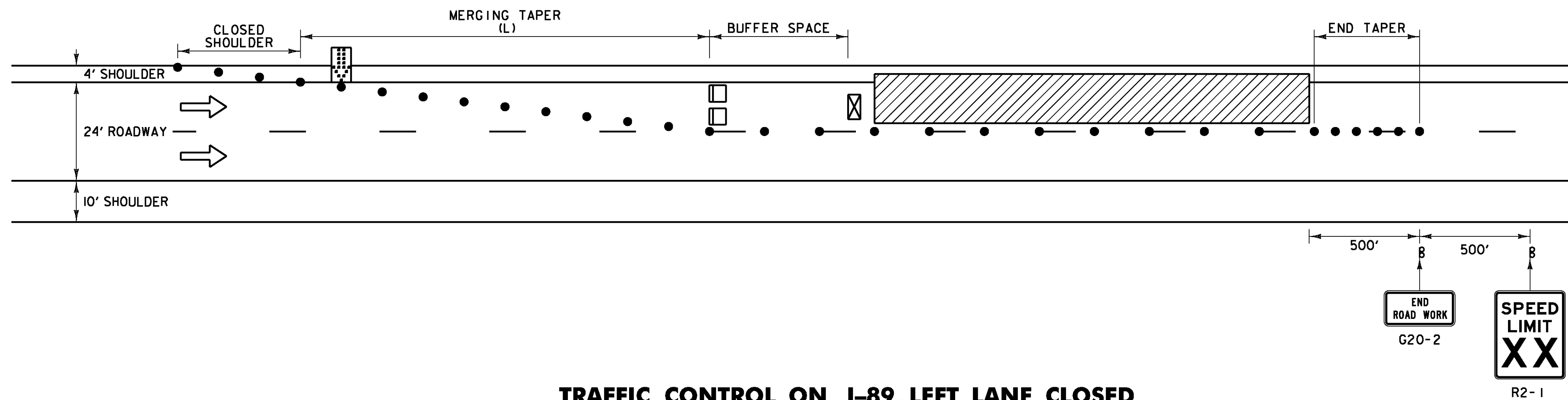
NOTES:

- 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.
- 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.

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		Bridge Design Supervisor S.M. GUNN	
Date 11/09		Date 11/09	
PROJECT RICHMOND		PROJECT NO. 1M BPNT (3)	
I.G.C. Info.			
Bridge Sheet No. Z08A206DET		Sheet 3 of 18	



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
 $L = WS/60$ FOR POSTED SPEEDS OF 40 MPH OR LESS

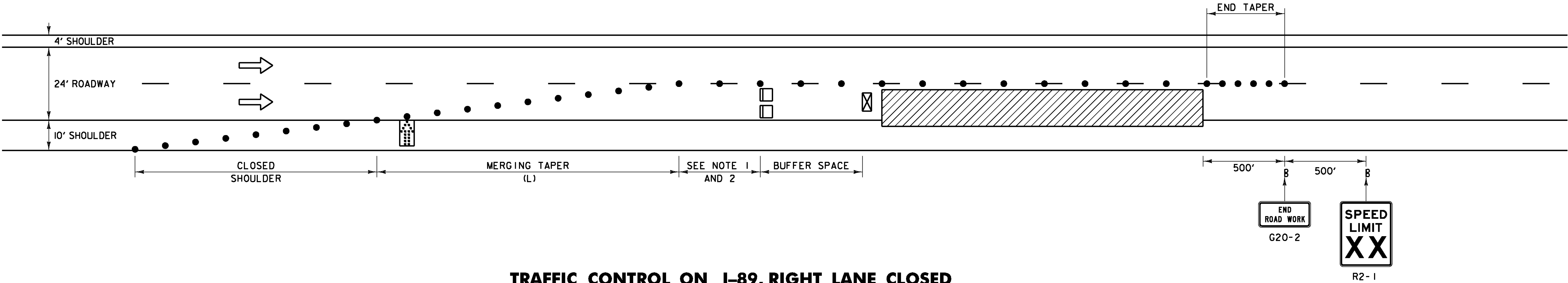
L = MINIMUM LENGTH OF TAPER
W = WIDTH OF OFFSET IN FEET. (TYPICAL)
S = POSTED SPEED IN MPH

TRAFFIC CONTROL NOTES I-89:

- 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.
- 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.
- SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
- 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).
- 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.
- ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
- 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.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL HAVE SIGNS FOR CLOSURE OF RIGHT AND LEFT LANES ON PROJECT BEFORE WORK COMMENCES.
- 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.
- 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.
- 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.
- 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.
- TRAVEL LANE SHALL BE 12 FEET WIDE.

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 1 OF 3)	
Designed By VTRANS	Drawn By VTRANS
Checked By Date	Bridge Design Supervisor
S.M. GUNN 11/09	S.M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. 1M BPNT (3)
I.G.C. Info.	
Bridge Sheet No. Z08A206TC	Sheet 4 of 18



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)

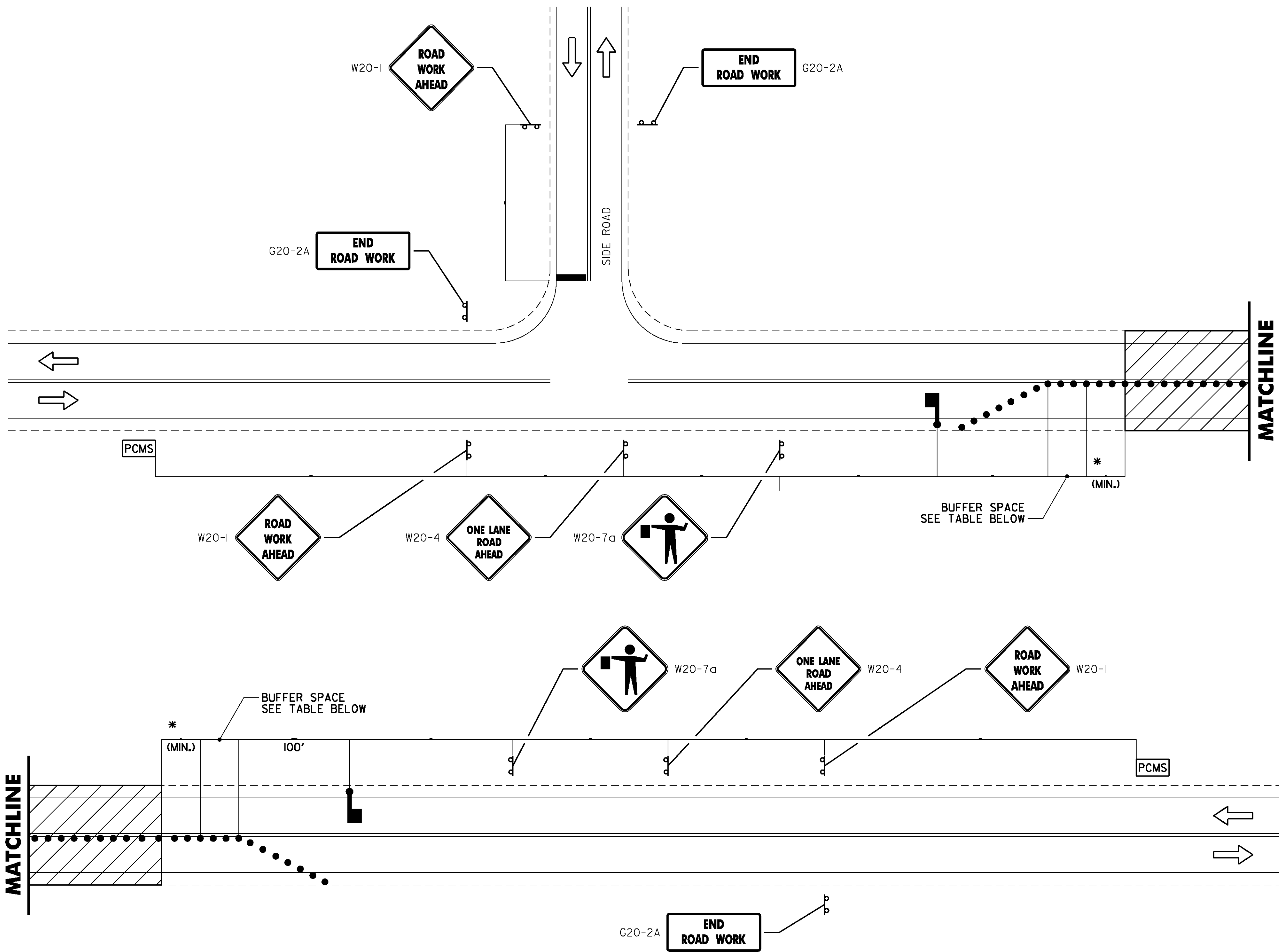
POSTED SPEED (MPH)	TAPER LENGTHS (FT)		TANGENT W=12 FT (L/2)	BARRIER FLARE RATE (MINIMUM)	MINIMUM BUFFER SPACE LENGTH (FT)	MAXIMUM CHANNELIZING DEVICE SPACING (FT)	
	SHOULDER W=10 FT (L/3)	MERGING 12 FT LANE (L)				TAPER (S)	TANGENT (2S)
≤40	90	320	160	1:9	305	40	80
45	150	540	270	1:9	360	45	90
50	170	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 = 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

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 11/09	Bridge Design Supervisor S.M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. 1M BPNT (3)
I.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)

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**

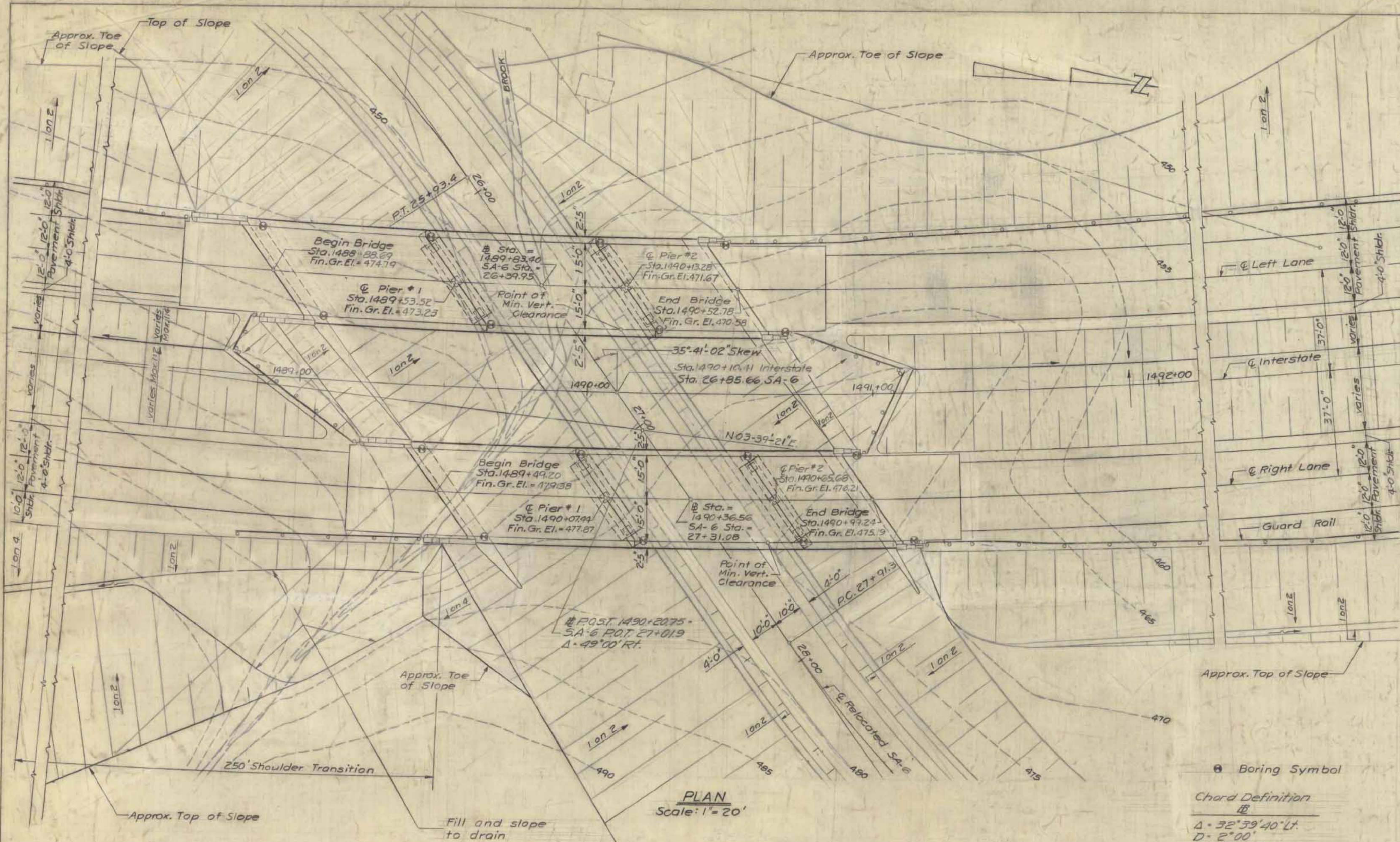
Town Of RICHMOND	Bridge No. 55,56,59
Highway No. 1-89 N&S	Log Sta.
	Surv. Sta.
1-89 N&S	
TRAFFIC CONTROL (SHEET 3 OF 3)	
Designed By VTRANS	Drawn By VTRANS
Checked By Date	Bridge Design Supervisor
S.M. GUNN 11/09	S.M. GUNN Date 11/09
PROJECT RICHMOND	PROJECT NO. 1M BPNT (3)
I.G.C. Info.	
Bridge Sheet No. Z08A206TC	Sheet 6 of 18

PLOTTED 11/16/2009

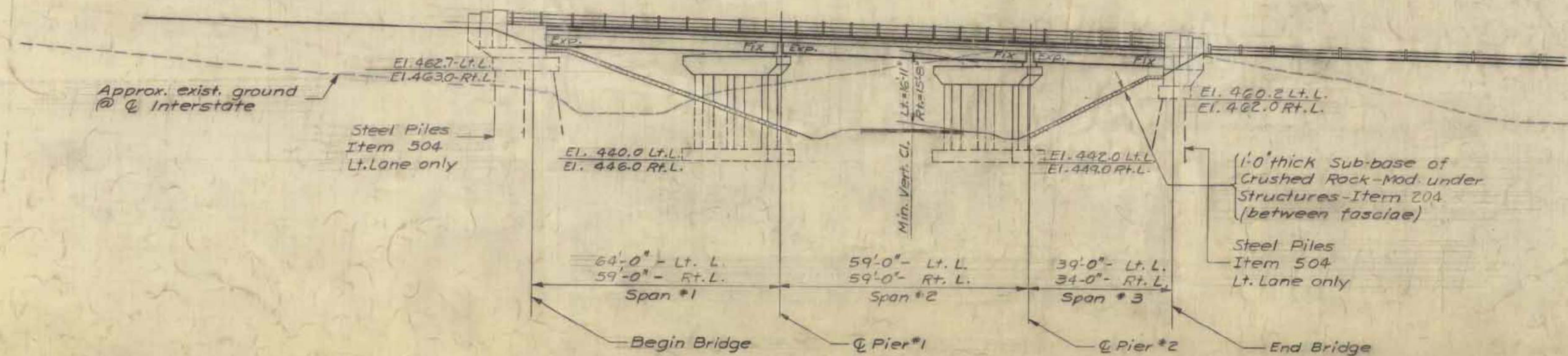
VHB NO. 52013

TRAFFIC CONTROL NOTES OTHER HIGHWAYS:

- 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 641.0. 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.
- 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.
- ANY PUBLIC HIGHWAYS BETWEEN THE FLAGGER AND THE WORK ZONE WILL REQUIRE AN ADDITIONAL FLAGGER TO MAINTAIN TRAFFIC CONTROL FOR THE PUBLIC HIGHWAY.
- SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS OR CORNER SIGHT DISTANCE FROM TOWN HIGHWAYS OR DRIVES.
- 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).
- 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.
- ROLL UP SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM TYPE VI.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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".



PLAN
Scale: 1" = 20'



ELEVATION
Scale: 1" = 20'

REFERENCE DRAWINGS

STANDARD SHEETS
SCB-30-60
SCB-D-60
SB-59-60
SB-20-60
SB-22-60

INDEX OF DRAWINGS

- Dr.1. General Plan & Elevation
- Dr.2. Profiles & Sections
- Dr.3. Boring Logs
- Dr.4. South Abutment - Left Lane
- Dr.5. North Abutment - Left Lane
- Dr.6. South Abutment - Right Lane
- Dr.7. North Abutment - Right Lane
- Dr.8. Piers #1 Right & Left Lane
- Dr.9. Piers #2 Right & Left Lane
- Dr.10. Framing Plans & Railing Plans
- Dr.11. South Approach Slab - Left Lane
- Dr.12. North Approach Slab - Left Lane
- Dr.13. South Approach Slab - Right Lane
- Dr.14. North Approach Slab - Right Lane
- Dr.15. Reinforcement Sheet 1 of 3
- Dr.16. Reinforcement Sheet 2 of 3
- Dr.17. Reinforcement Sheet 3 of 3

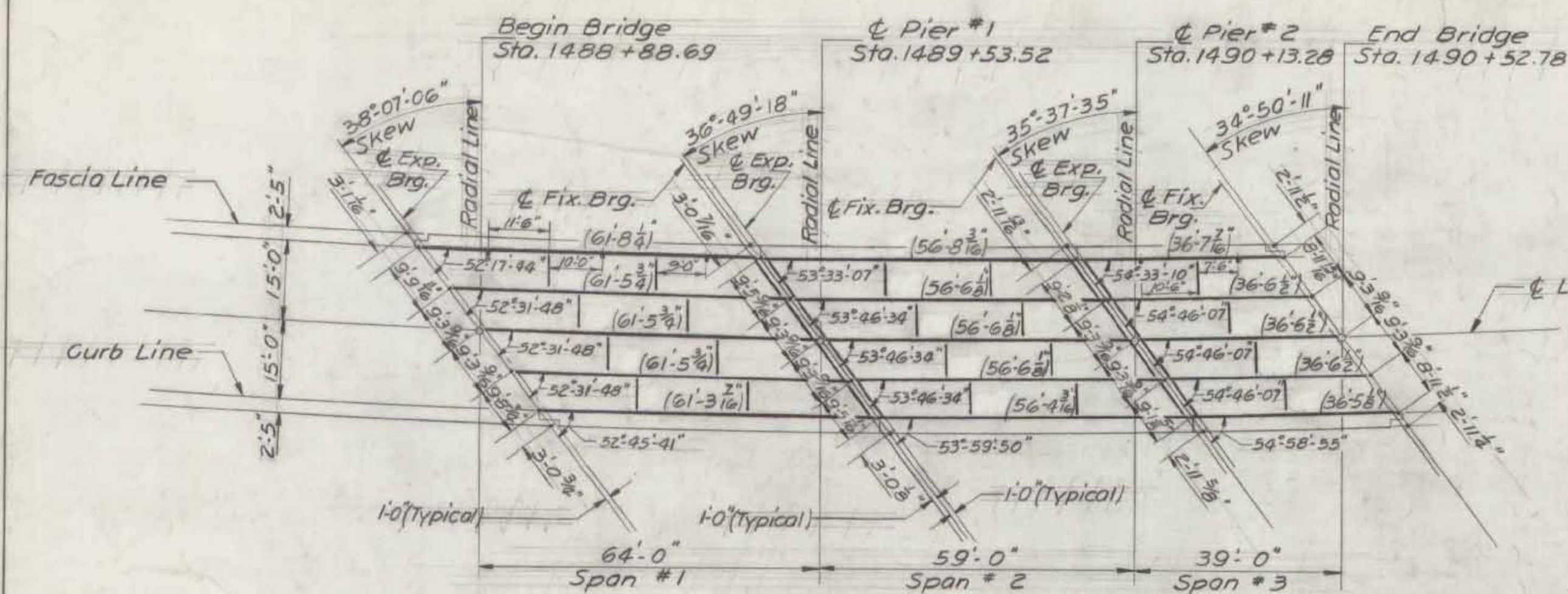
GENERAL NOTES:

- Materials and Construction shall conform to State of Vermont Department of Highways Standard Specifications for Highway and Bridge Construction, dated 1956.
- All design in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, dated 1957, Loading is H20-S16-44 truck as modified for National System of Interstate Highways.
- Rt. Lane abutments and all piers shall be supported on spread footings bearing on soil. Allowable soil bearing pressure = 2 1/2 T/FT².
Rt. Lane Abutments = 1 1/2 T/FT²
Piers = 2 1/2 T/FT²
Lt. Lane abutments shall be supported on 12BP53 Steel Bearing Piles - Item 504. Estimated length of piles = 15'.
- The final coat of field paint shall be green unless otherwise directed by the engineer.
- All dimensions given are measured horizontally or vertically unless otherwise noted or shown.
- All dimensions given at 68°F.
- All reinforcement to have a clear cover of 2" unless otherwise noted.
- All exposed edges of concrete shall be chamfered 1"x1" unless otherwise noted.
- 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).
- Unless otherwise called for all beams shall be cambered as specified on SCB-D-60.
- All expansion material shall be pre moulded cork containing no bituminous or asphalt.

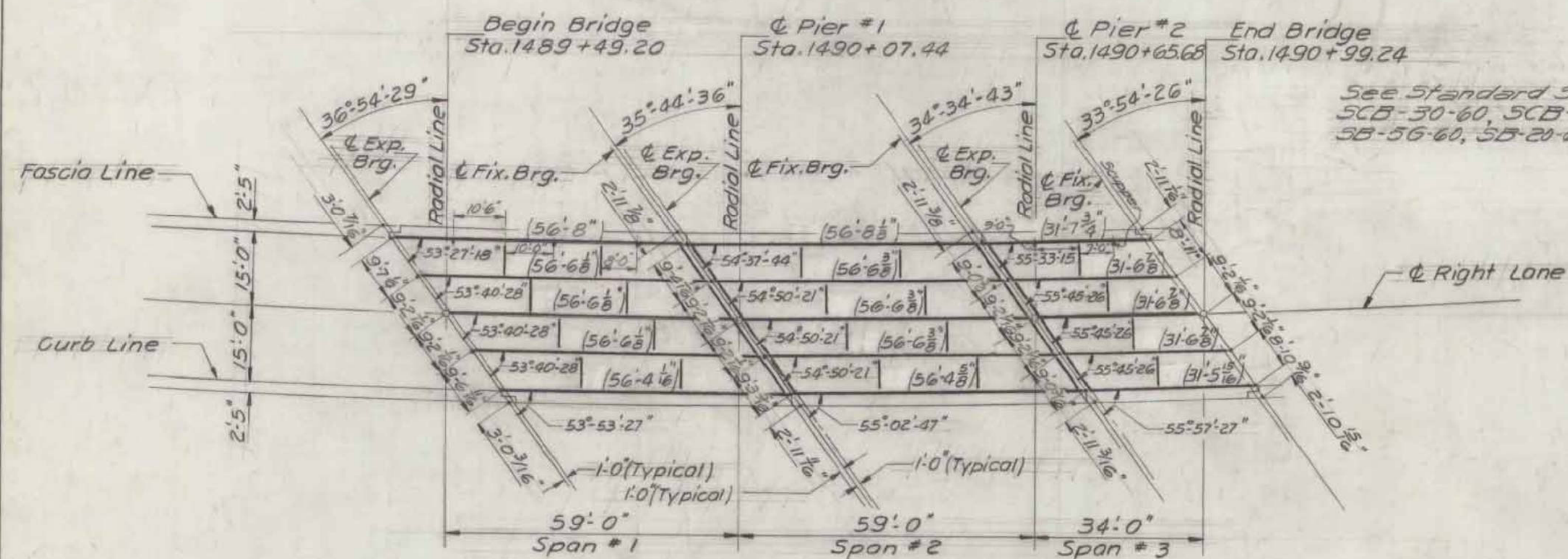
PRELIMINARY INFORMATION SHEET FOR BRIDGES

VERMONT
STATE HIGHWAY DEPARTMENT
TOWNS OF BOLTON-RICHMOND
INTERSTATE ROUTE 89
INTERSTATE BRIDGE OVER
RELOCATED SA-6
GENERAL PLAN AND ELEVATION
DESIGNED BY: J.S. CHECKED BY: J.B. DATE: 7/25/61
DRAWN BY: H.H.T. IN CHARGE: J.B. SCALE: 1" = 20'
PROJECT NO. I 89-2(8) SH. 96 OF 261
CONTRACT NO. 4 BRIDGE SHEET 1 OF 17

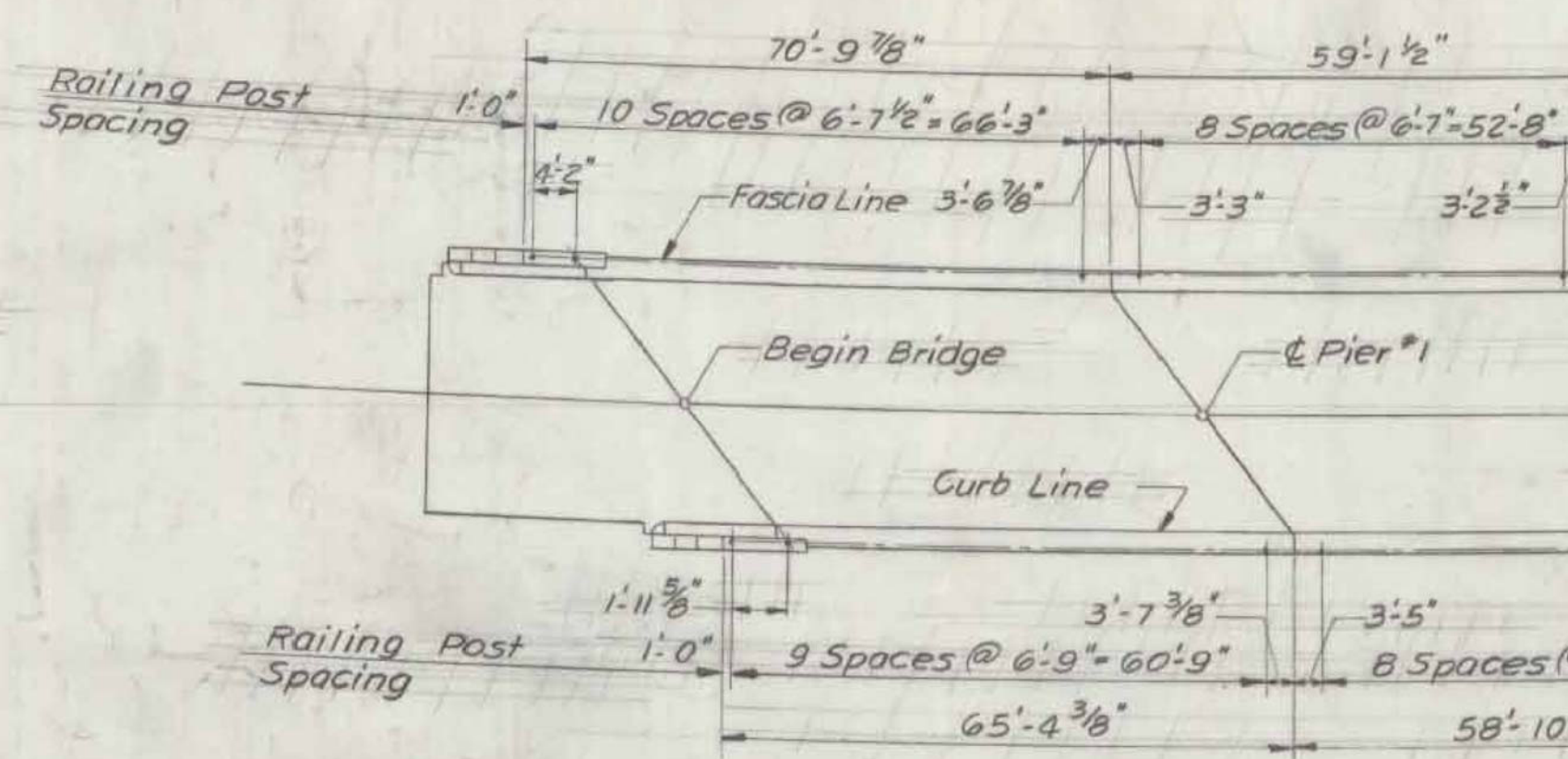
RICHMOND
IM BPNT (3)
SHEET 7 OF 18
BRIDGE 55
FOR REFERENCE ONLY



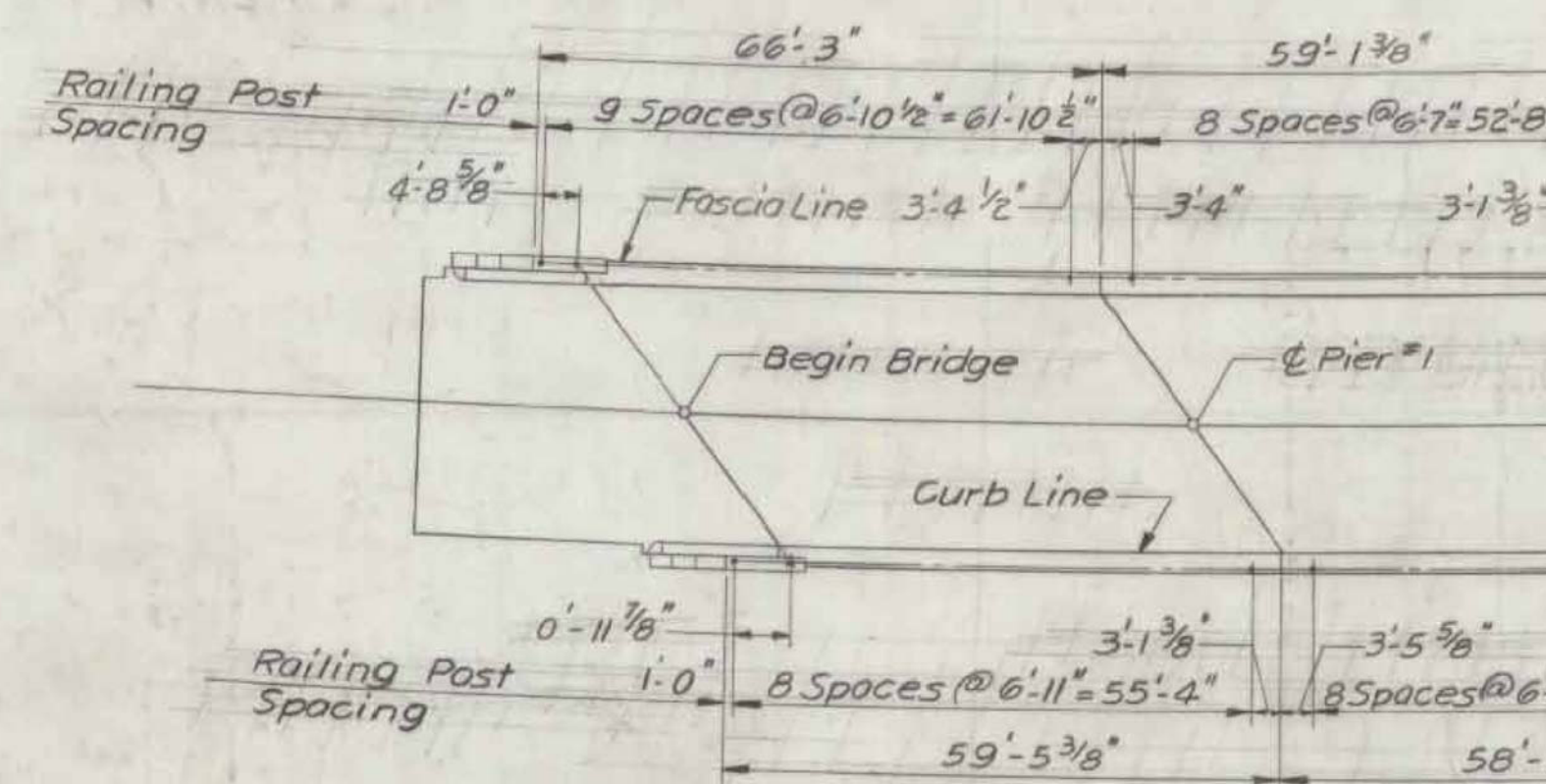
FRAMING PLAN - LEFT LANE
Scale: 1" = 20'



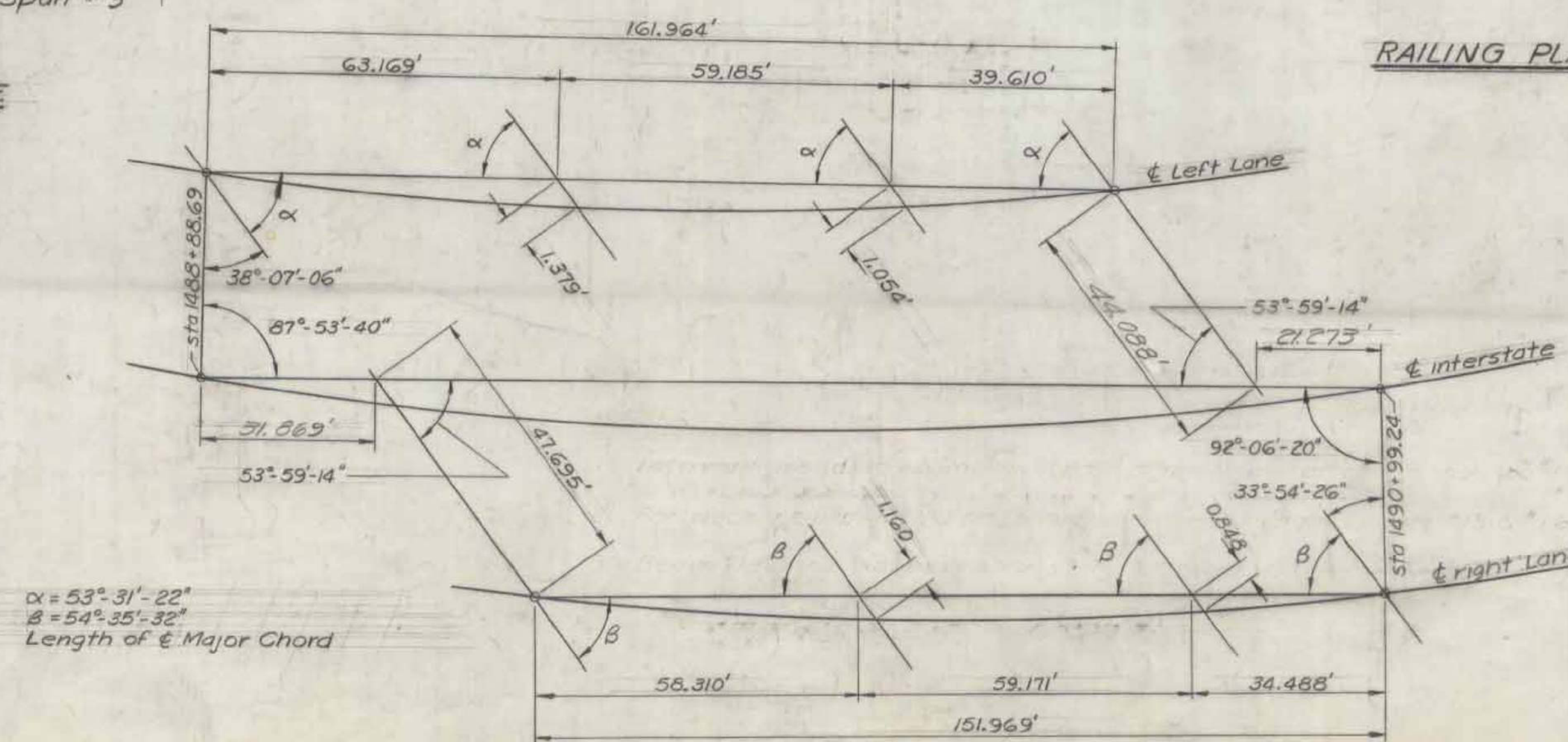
FRAMING PLAN - RIGHT LANE
Scale: 1" = 20'



RAILING PLAN - LEFT

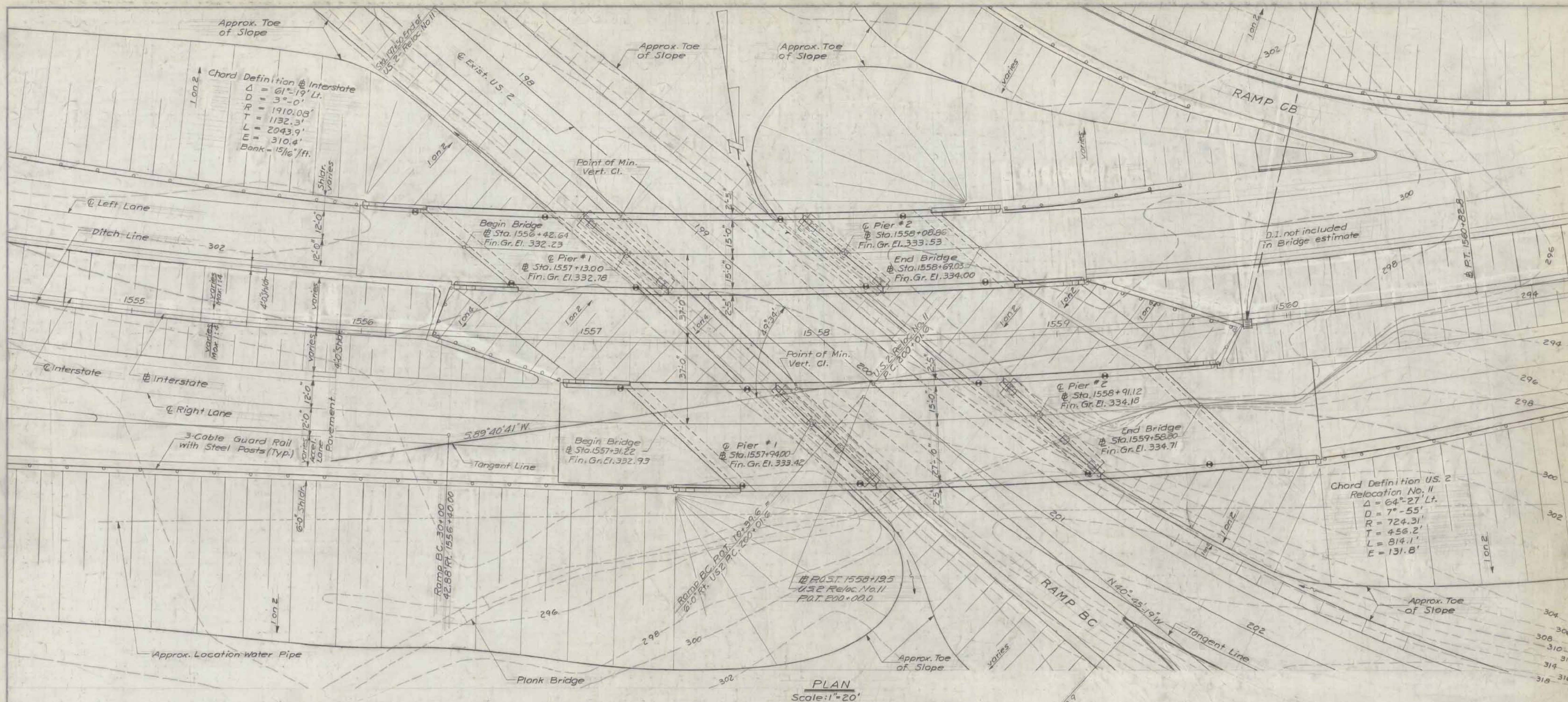


RAILING PLAN - RIGHT LANE

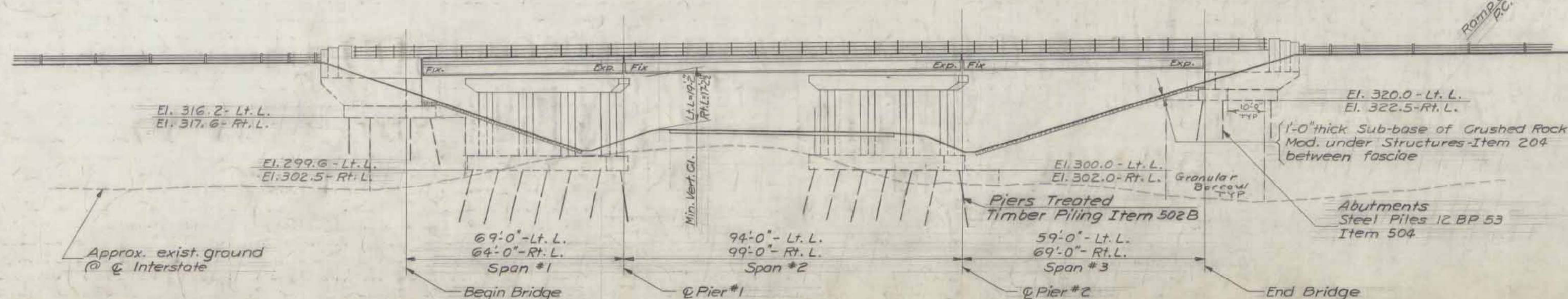


LAYOUT FROM MAJOR CHORD

FOR REF



PLAN
Scale: 1" = 20'



ELEVATION
Scale: 1" = 20'

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

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

M. FARLAND - JOHNSON
CONSULTING ENGINEERS
BINGHAMTON, NEW YORK

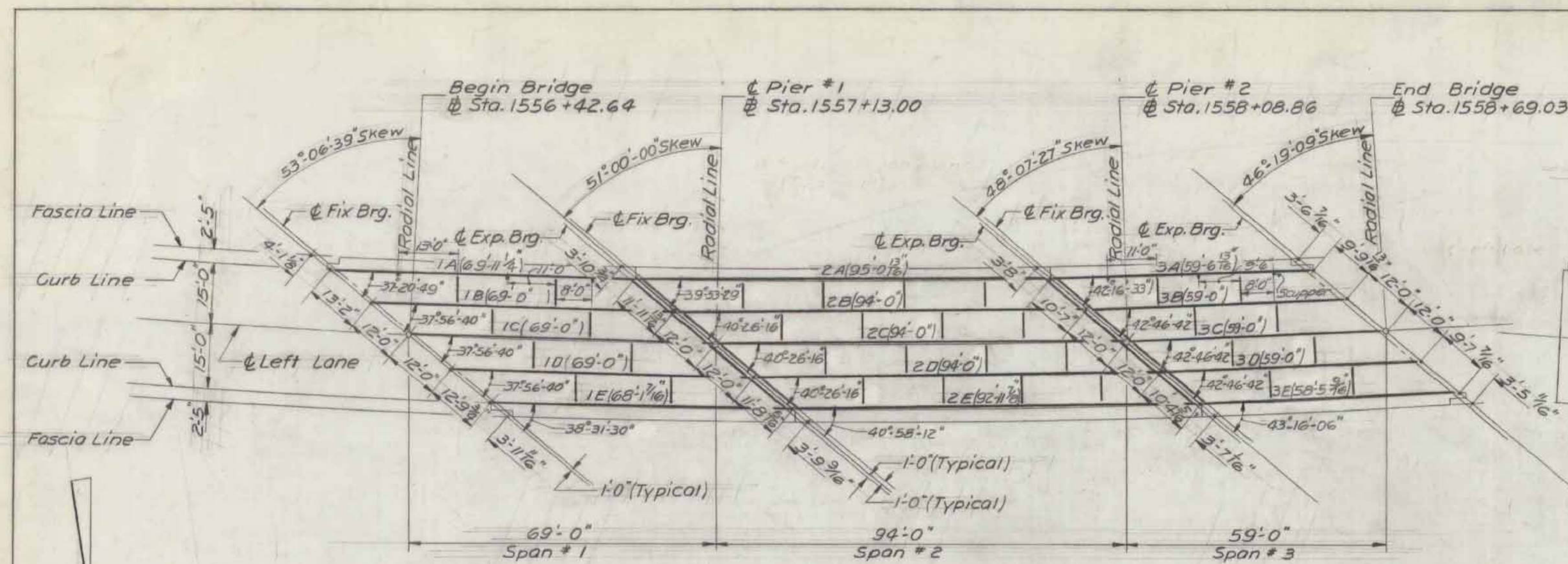
DESIGNED L.H.S. CHECKED: J.E. DATE: 7-25-61
DRAWN: H.T. IN CHARGE: H.G. SCALE: 1" = 20'

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

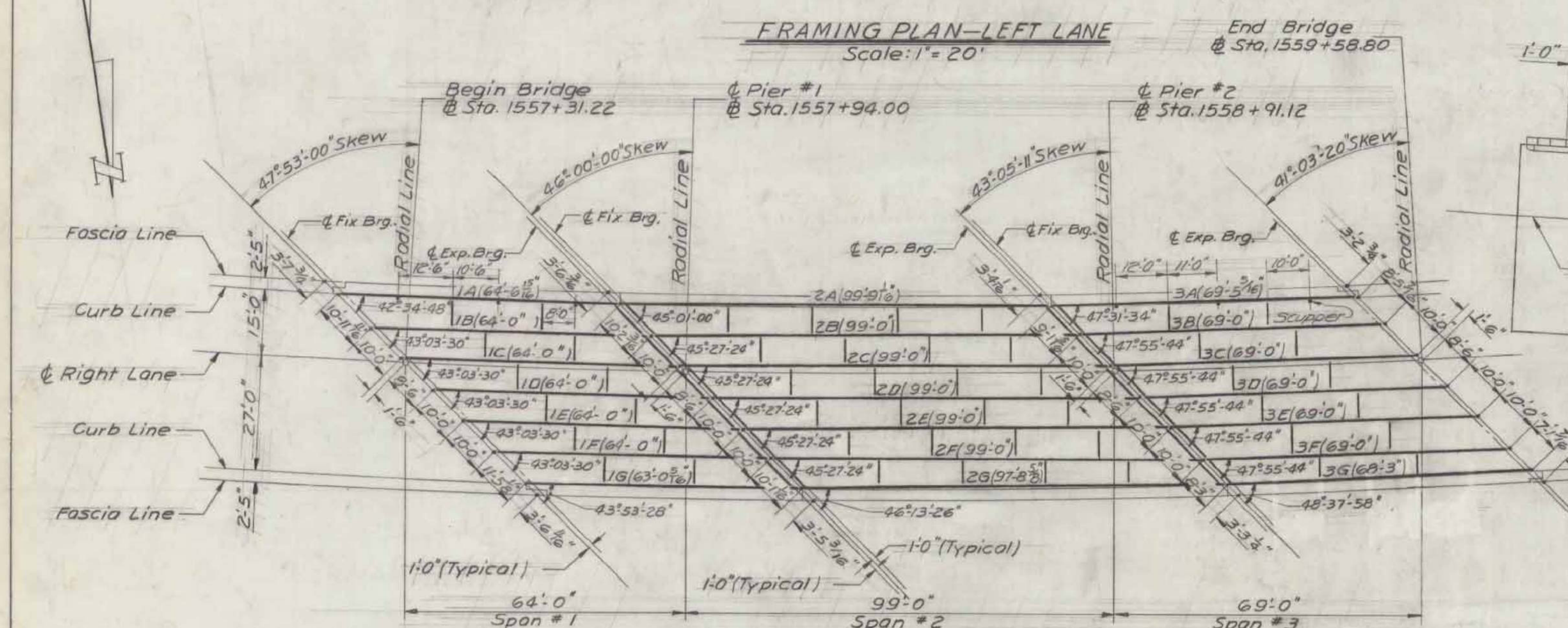
CONTRACT NO. 4 BRIDGE SHEET 1 OF 18

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

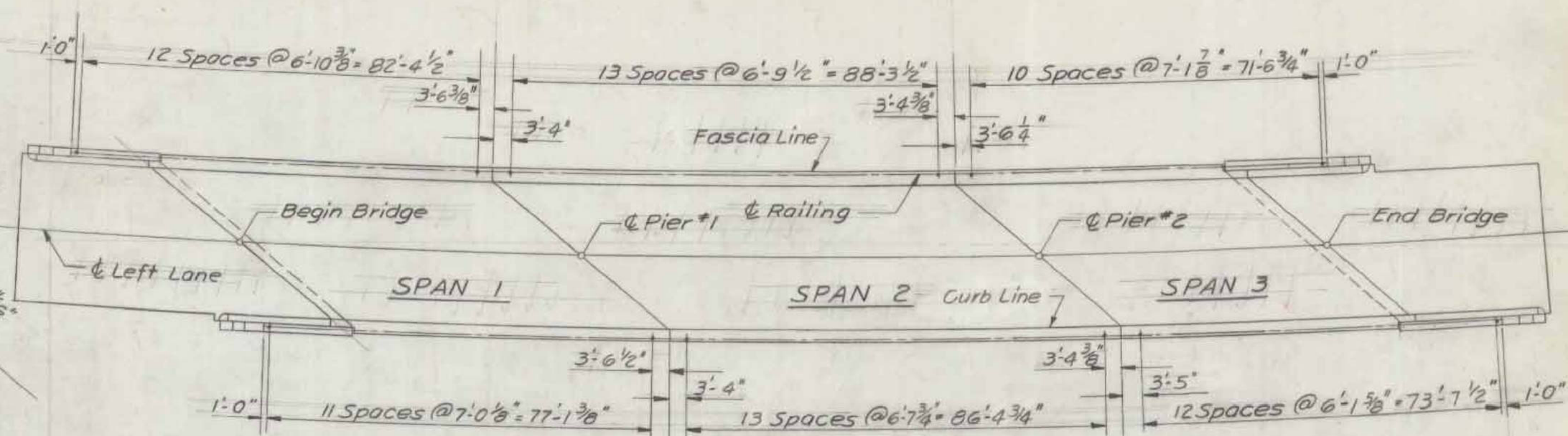
BR
#56



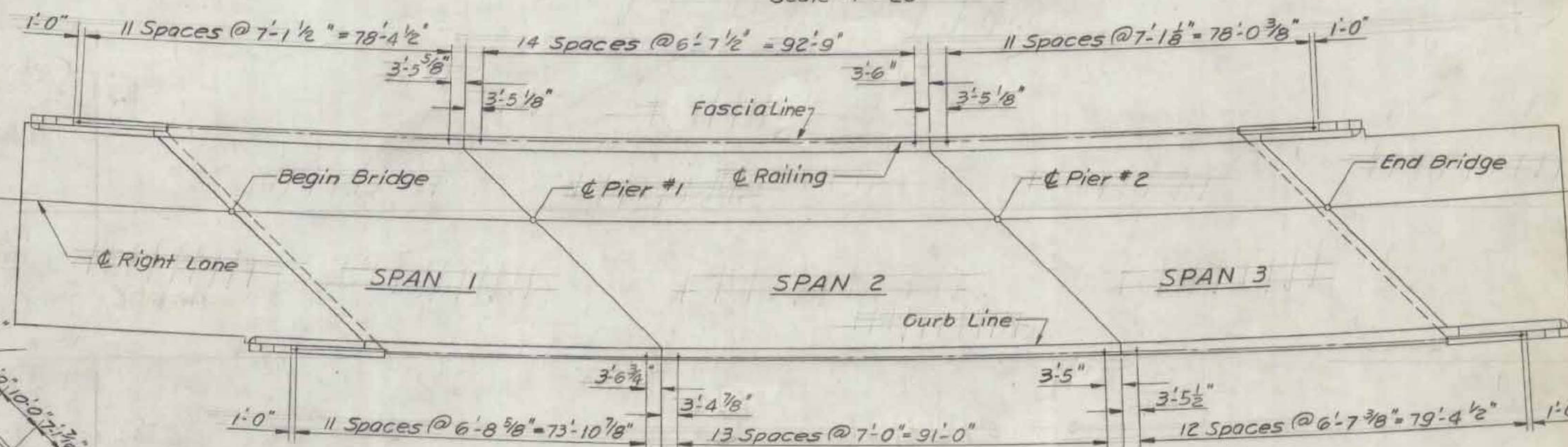
FRAMING PLAN-LEFT LANE
Scale: 1" = 20'



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



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

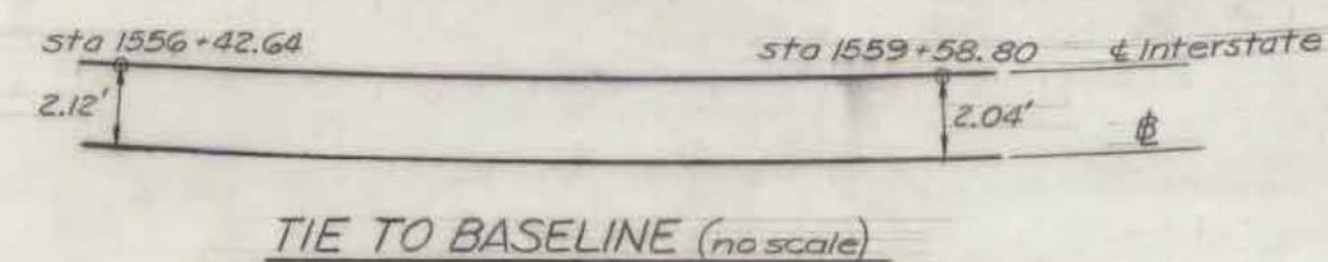


RAILING PLAN-RIGHT LANE
Scale: 1" = 20'

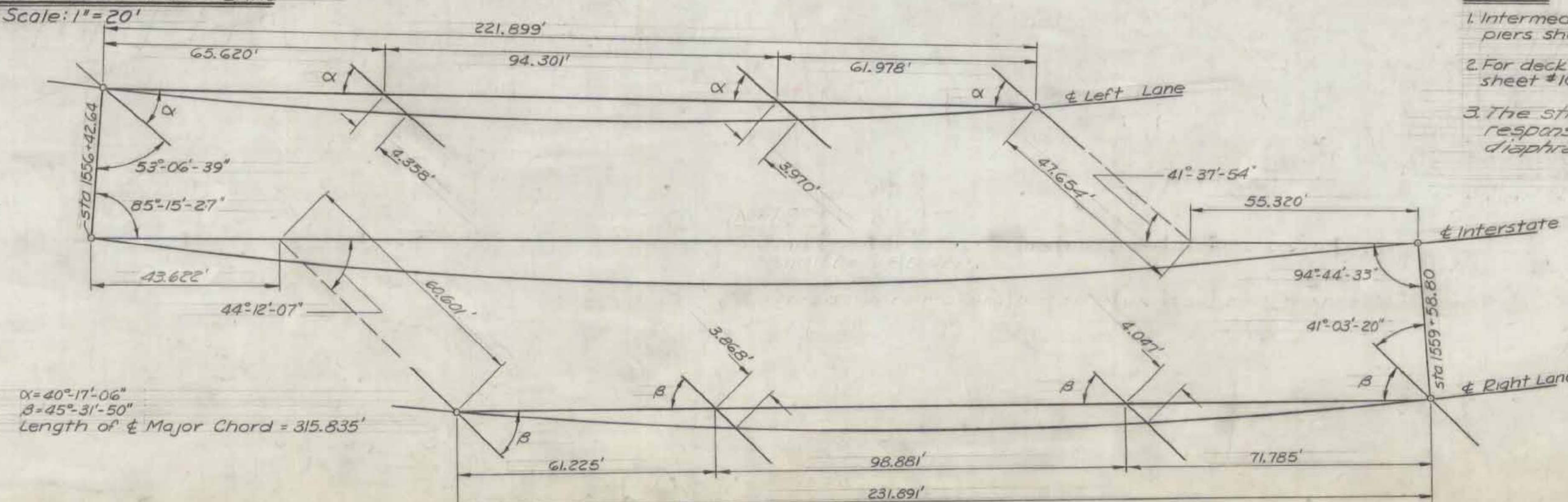
Notes:
See Standard Sheets
SCB-30-60, SCB-42-60, SCB-D-60,
SB-20-60, SB-56-60

NOTES:

1. Intermediate diaphragms and end diaphragms at piers shall be 16' x 42'.
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.



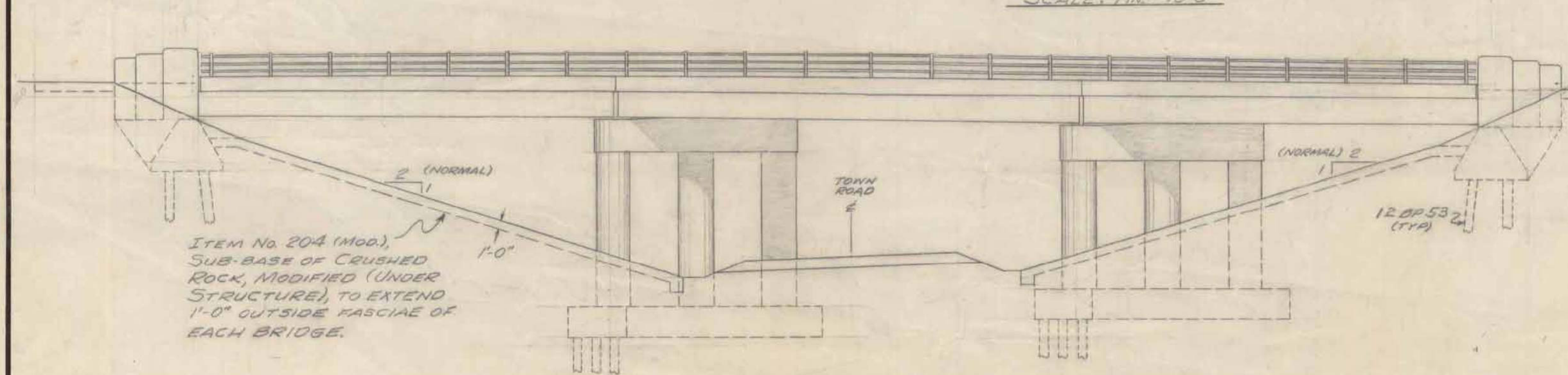
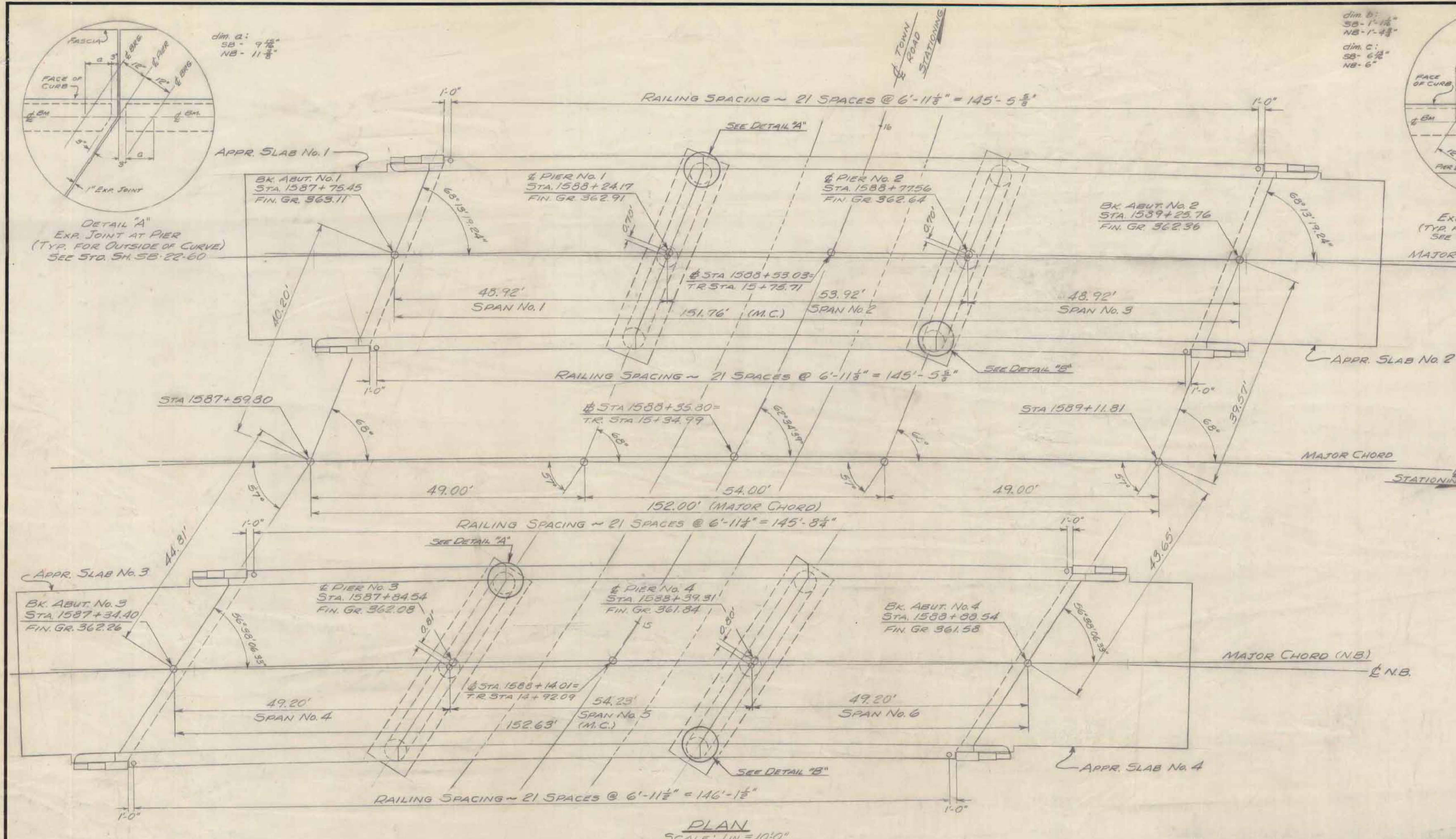
TIE TO BASELINE (no scale)



LAYOUT FROM MAJOR CHORD (no scale)

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

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.H.T. SCALE: 1" = 20'
PROJECT NO. I 89-2(8) SH 123 OF 261
CONTRACT NO. 4 BRIDGE SHEET 11 OF 18



INDEX OF BRIDGE SHEETS

SHEET NO.	DESCRIPTION
57	Preliminary
58	Plan
59	Frame
60, 61	Boring
62	Abut.
63	Abut.
64	Pier
65	Pier
66	Approach
67	Reinforcement
68	Reinforcement
69	Std. 3
70	Std. 3
71	Std. 3
72	Std. 3
73	Std. 3

- GENERAL NOTES
- All material & construction shall conform to the Vermont Dept. of Highways, Standard Specifications for Highway and Bridge Construction, and the AASHTO Specifications for H-20-44 loading, and the provisions of the AASHTO Standard Specifications for Highway Bridges, Art. 12.8.
 - Concrete shall attain a minimum strength of 3000 psi, in addition to any superimposed loads.
 - All welding to conform to the AASHTO Standard Specifications for Highway Bridges, Art. 12.8.
 - All dimensions given are measured vertically unless noted.
 - All stationing on Northbound refers to the Base Line (B.L.).
 - Superstructure details to be in accordance with SCB-30-60 and SCB-D-60.
 - 3-Rail Bridge Railing to be in accordance with SB-56-60, sheets 1 & 2.
 - Granite Bridge Curb (Type I) Sheet SB-56-60, sheet 1.
 - The contractor's attention is called to the fact that granular fill in the vicinity of the bridge shall conform to the Special Provisions.
 - Where rock is encountered, no blasting shall be done within 200 ft of the bridge.
 - All reinforcing steel shall have otherwise noted.

LIST OF BRIDGE QUANTITIES (TWO BRIDGES)

ITEM NO.	ITEM	UNIT	NET	O'RD.	TOTAL	FINAL
204	SUB-BASE OF CRUSHED ROCK (MOD.)	C.Y.	216	28	244	269
222	GRAVEL BACKFILL	C.Y.	66	70	136	0
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	553	-	553	*
361-B	BITUMINOUS CONCRETE PAV'G (MOD.)	TON	156	5	161	*
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	48	166	118
401-B	CONC. CLASS B (MOD.)	C.Y.	443	24	467	483
402	REINF. STEEL	LBS.	116,016	-	116,016	175,403
407	ASPHALTIC-ASB. COATING	S.Y.	84	-	84	80
502-B	TREATED TIMBER PILING	L.F.	32	-	32	19
503	SPLICES FOR STEEL PILING	EA.	32	-	32	19
504	STEEL PILING	L.F.	443	-	443	6,636
502-A	UNTREATED TIMBER PILING	L.F.	-	-	-	-
401-D	CONCRETE CLASS D (MOD.)	C.Y.	443	24	467	581
403	SPIRAL REINFORCEMENT (3820)	L.S.	14	-	14	1
404-A	STRUCTURAL STEEL	LBS.	26,434	533	26,967	263,505
501	FURNISHING EQUIP. FOR DRIVING PILES	L.S.	1	-	1	1/2
556-C	GRANITE BRIDGE CURB (MOD.)	L.F.	33	-	33	678
572	BRIDGE RAILING	L.F.	38	-	38	590

STATE DEPARTMENT
TOWN OF R...
ROUTE NO. 1
PLAN & ELEVATION
Town Road
SCALE
SURVEYED BY
DRAWN BY
PROJECT
SHEET

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

- 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 18L 42.7. Pier diaphragm connections to be as shown on Standard Sheet SCB-D-60, modified to fit actual skew.
 3. Bearing devices to be as shown on Standard Sheet SB-20-60.

SUPERSTRUCTURE QUANTITIES		SB	NB	SB	NB	SB	NB	SB	NB
ITEM NO	ITEM	UNIT	NET	ORUN	TOTAL	FINAL			
318	TAR EMULSION FOR BRIDGE FLOORS	GAL.	202	202	-	202	202	*	*
364B	BITUMINOUS CONCRETE PAVEMENT (MOD.)	TON	47	47	47	47	47	*	*
403	SPIRAL REINFORCEMENT (8820)	L.S.	1	1	-	1	1		
404A	STRUCTURAL STEEL	L.B.	304	304	304	304	304		
536C	GRANITE BRIDGE CURB (170D)	L.F.	304	304	-	304	304		
572	BRIDGE RAILING	L.F.	294	294	-	294	294		
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	168	168	168	168		
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.							

* Included in Roadway Quantities

STATE OF VERMONT
DEPARTMENT OF HIGHWAYS

TOWN OF RICHMOND-WILLISTON

ROUTE NO. 189 LOG STA.

FRAMING PLAN &
TYPICAL SECTION

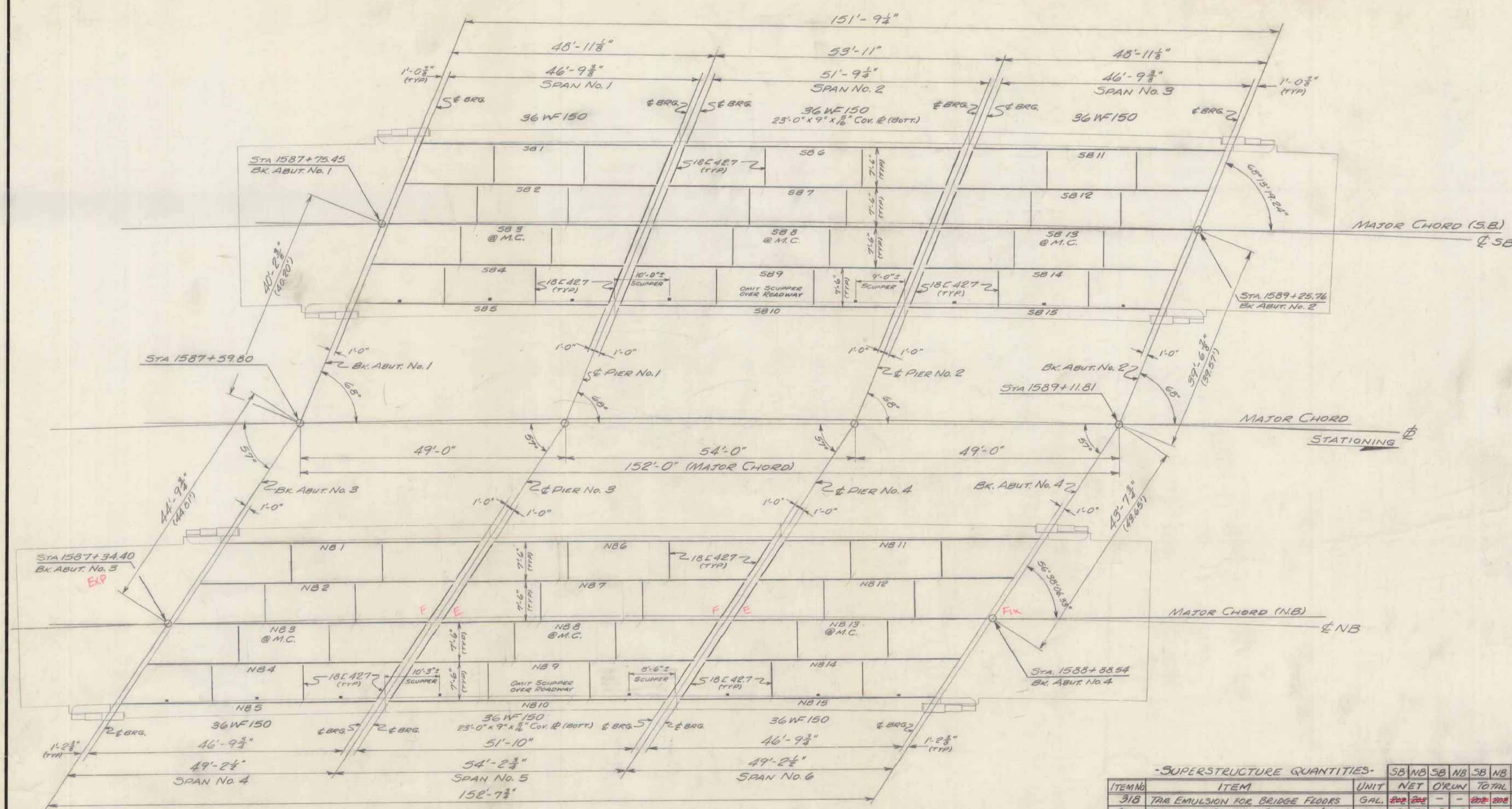
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SURVEYED BY

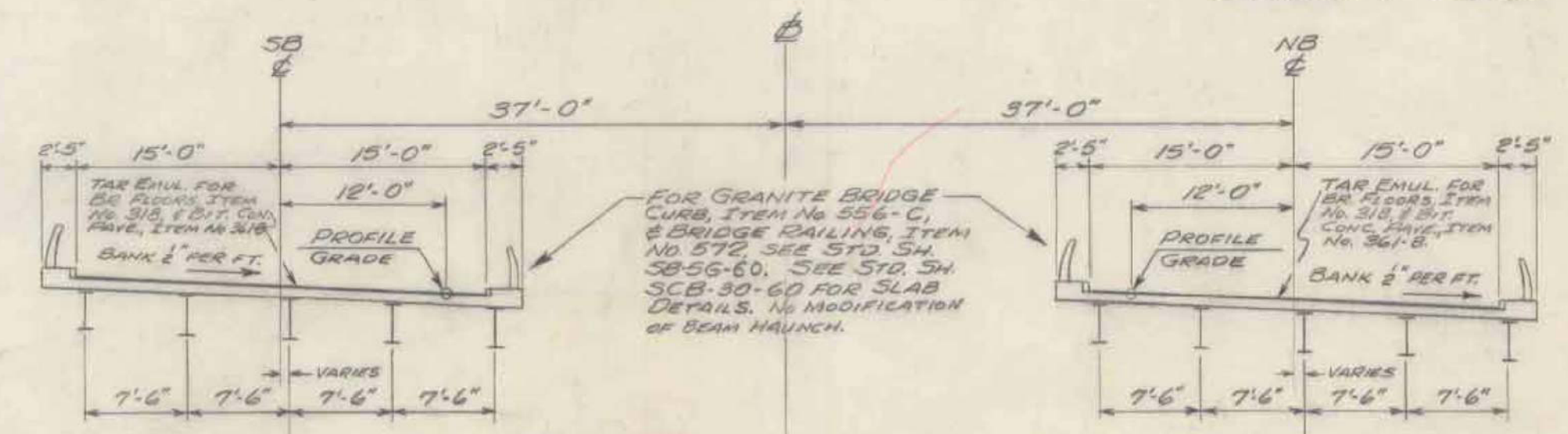
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PROJECT NO. 189-2(9)

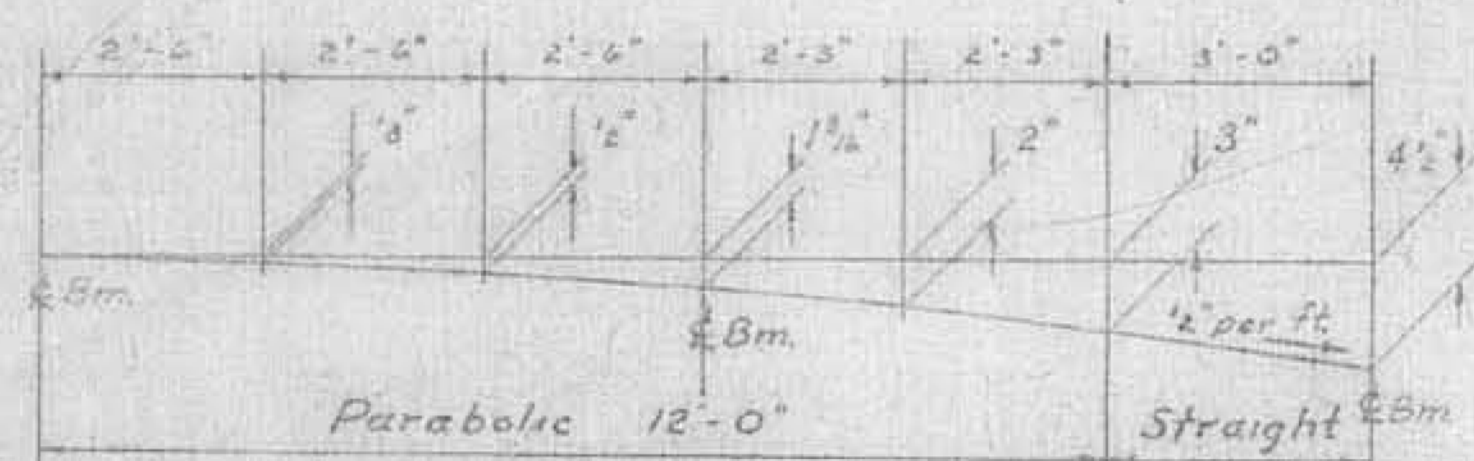
SHEET 12 OF 18 Cont #1



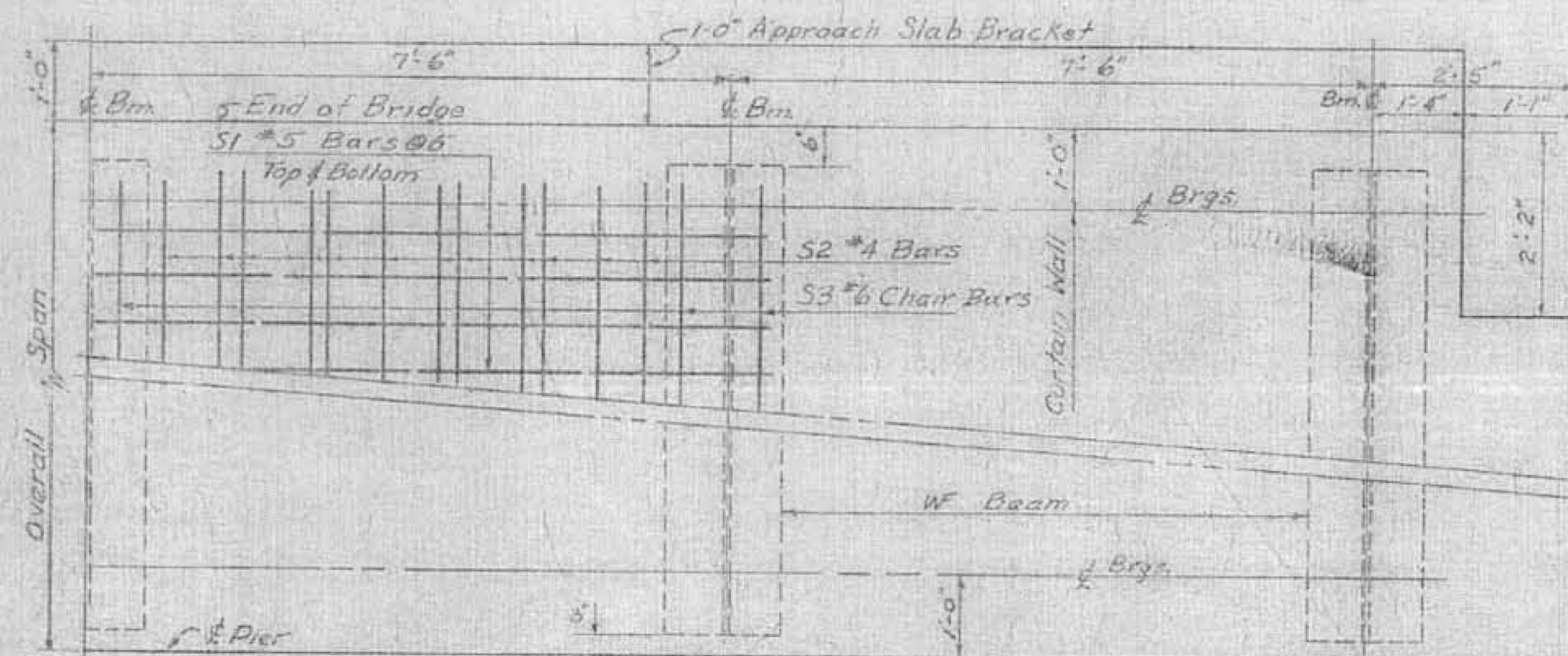
FRAMING PLAN
SCALE: 1" = 10'-0"



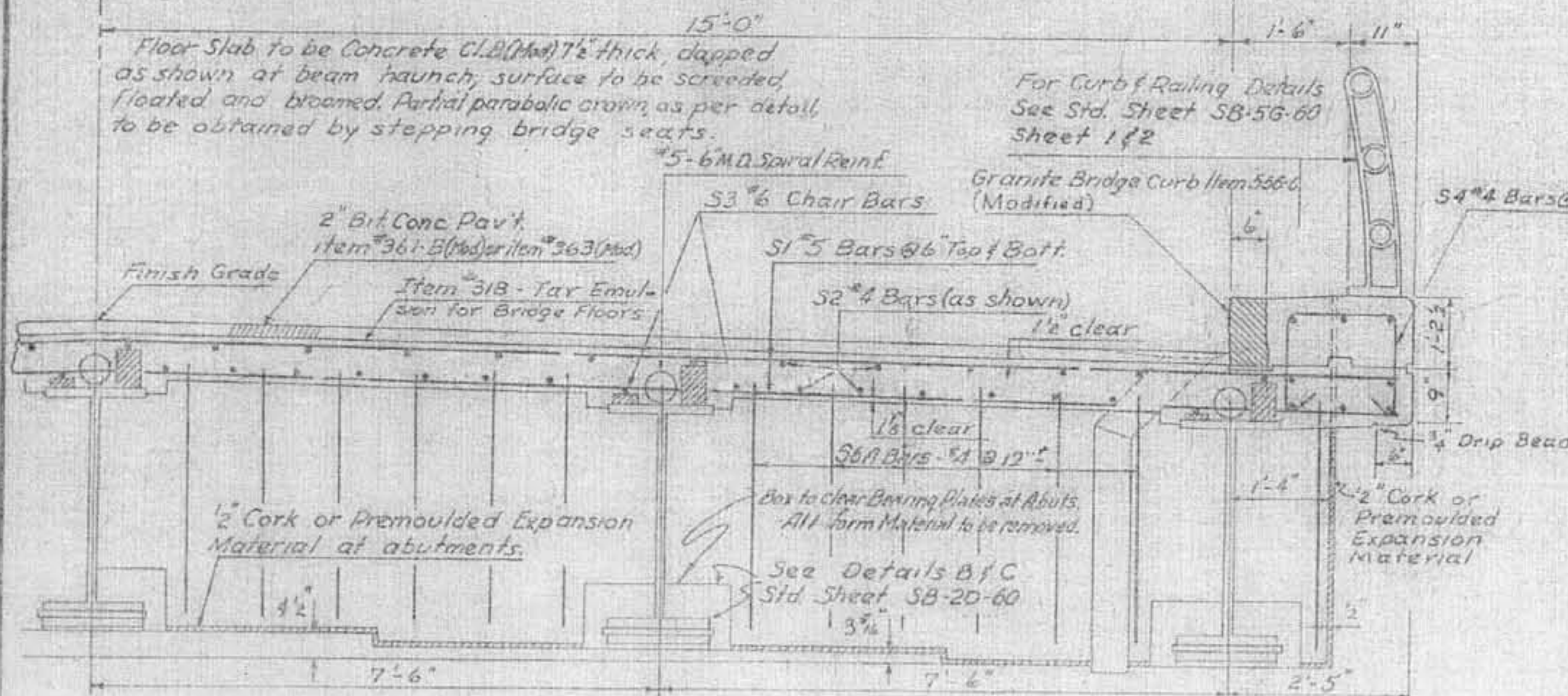
TYPICAL SECTION
SCALE: 1" = 10'-0"



DETAIL OF PARTIAL PARABOLIC CROWN OF SLAB



HALF PLAN



TYPICAL HALF SECTION

Revisions & Corrections
Changed To 12" Curb 9/1/60

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

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

34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

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 E Brigs.	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 Brigs.	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 W/ Beam	36WF300	36WF300	36WF300	36WF245	36WF194	36WF170	36WF160	36WF150	36WF150	36WF150	36WF150	36WF150	36WF130	30WF116
Lght. f Size Bot Cover ft.	6'-0"	5'-0"	4'-0"	3'-0"	2'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"
Dead load Deflection	3"	2"	2"	2"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
Dia of Spiral Bars														
Mean Dia. of Spiral														
Spiral Pitch 0'-10' from Brigs.	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"	Double @ 5"
" 10'-20' or E Span	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"	Double @ 6"
" 20'-30' or E Span	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"	4"
" 30'-40' or E Span	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"	5"
" 40'-E Span	7"	7"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"
Length of 1/2" Studs (Alternate to Spiral)	(2 Studs required per pitch, 6' long unless otherwise specified on the plans)													
Tot. Struct. Steel (1 span) (lbs.)	192,860	169,900	156,410	123,370	99,000	82,950	69,500	59,080	52,070	44,560	41,610	37,780	28,150	22,190
Reinforcing Bars - S1	376	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	112	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	9,070	7,900
Approx. Wt. Spiral Reinf. (lbs.)	2,550	2,520	2,280	2,370	2,320	2,190	2,070	1,960	1,690	1,550	1,430	1,310	1,190	1,070
Tot. Cyls. Conc. Class. #4 (Mod) (lbs.)	116	111	106	101	95	90	85	79	73	68	63	58	51	45
Tot. Wt. Bitum. Conc. Plast. (Mod) (lbs.)	42	40	38	36	34	32	29	27	25	23	21	19	17	15
or Emulsion for Bridge Floors (Gals.)	132	125	119	112	105	99	92	85	79	72	65	59	52	45
Approx. Quantity 1/2" x 6" Studs	3000	2900	2600	2700	2700	2500	2400	2250	1990	1810	1660	1510	1360	1210

REINFORCING STEEL SCHEDULE

Span	S1 - #5	S2 - #4	S3 - #6	S4 - #4	S5 - #5	S6A - #4	S6B - #5
34	9'-6"	3'-6"	2'-6"	6'-6"	5'-3"	5'-3"	5'-3"
39	20'-3"	20'-6"	2'-9"	7'-0"	5'-3"	5'-3"	5'-3"
44	22'-9"	23'-0"	3'-0"	7'-6"	5'-3"	5'-3"	5'-3"
49	25'-3"	25'-6"	3'-0"	7'-6"	5'-3"	5'-3"	5'-3"
54	27'-9"	28'-0"	3'-0"	7'-6"	5'-3"	5'-3"	5'-3"
59	30'-3"	30'-6"	3'-0"	7'-6"	5'-3"	5'-3"	5'-3"
64	32'-9"	33'-0"	3'-0"	7'-6"	5'-3"	5'-3"	5'-3"
69	34'-3"	34'-6"	3'-2"	7'-10"	5'-3"	5'-3"	5'-3"
74	36'-0"	36'-3"	3'-2"	7'-10"	5'-3"	5'-3"	5'-3"
79	37'-6"	38'-0"	3'-3"	8'-0"	5'-3"	5'-3"	5'-3"
84	39'-3"	39'-6"	3'-3"	8'-0"	5'-3"	5'-3"	5'-3"
89	41'-0"	41'-3"	3'-3"	8'-0"	5'-3"	5'-3"	5'-3"
94	42'-6"	43'-0"	3'-4"	8'-2"	5'-3"	5'-3"	5'-3"
99	44'-3"	44'-6"	3'-4"	8'-2"	5'-3"	5'-3"	5'-3"

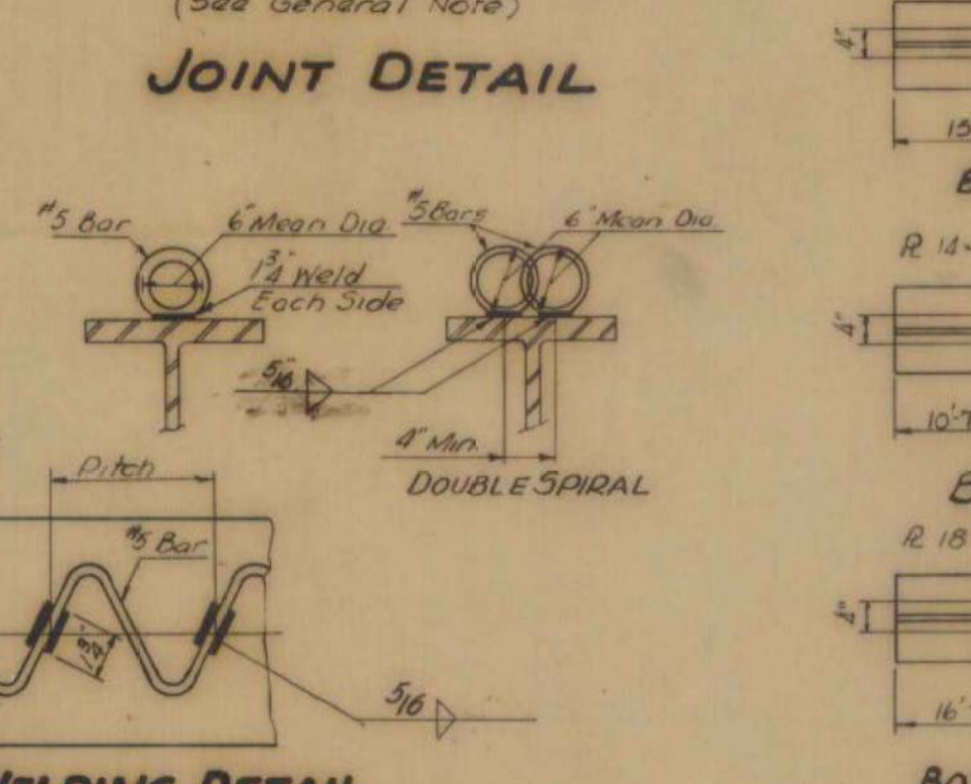
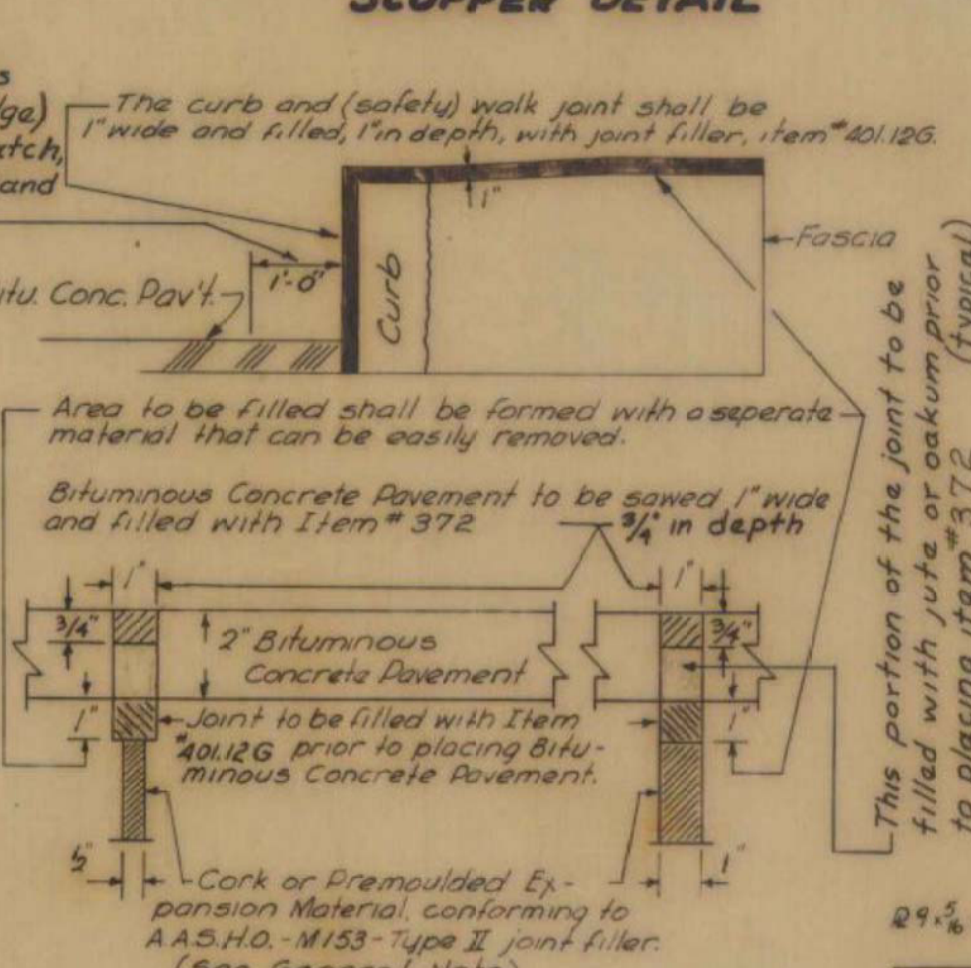
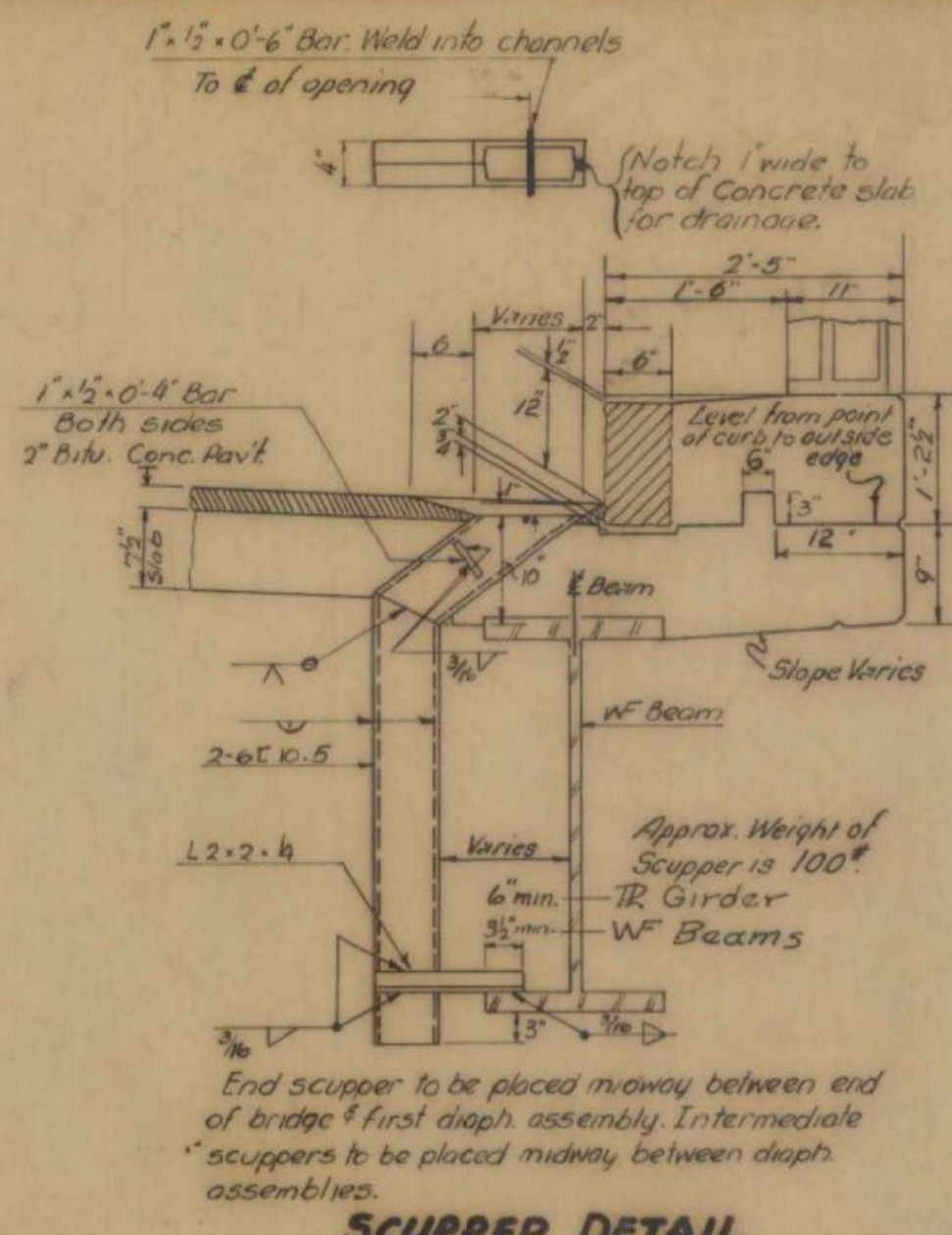
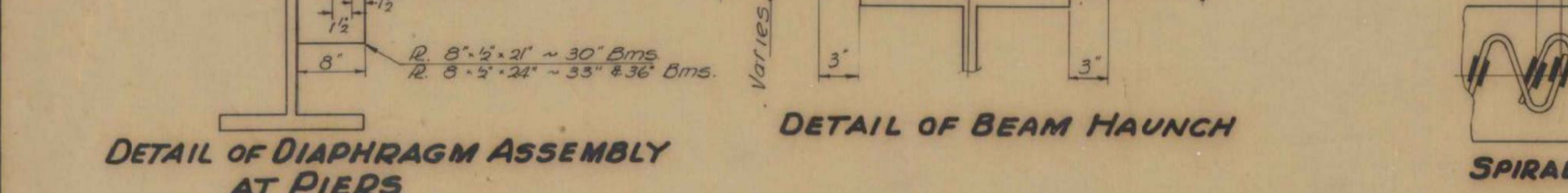
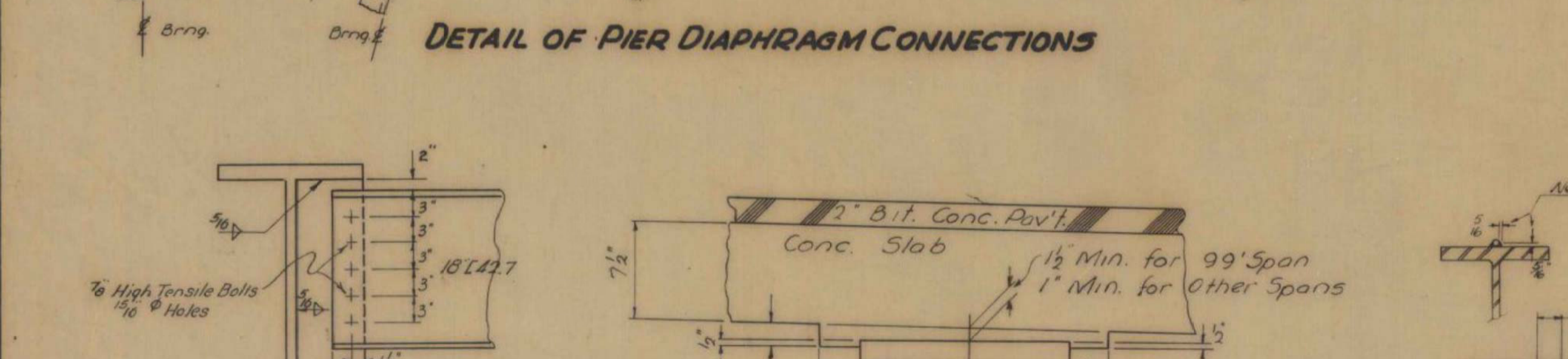
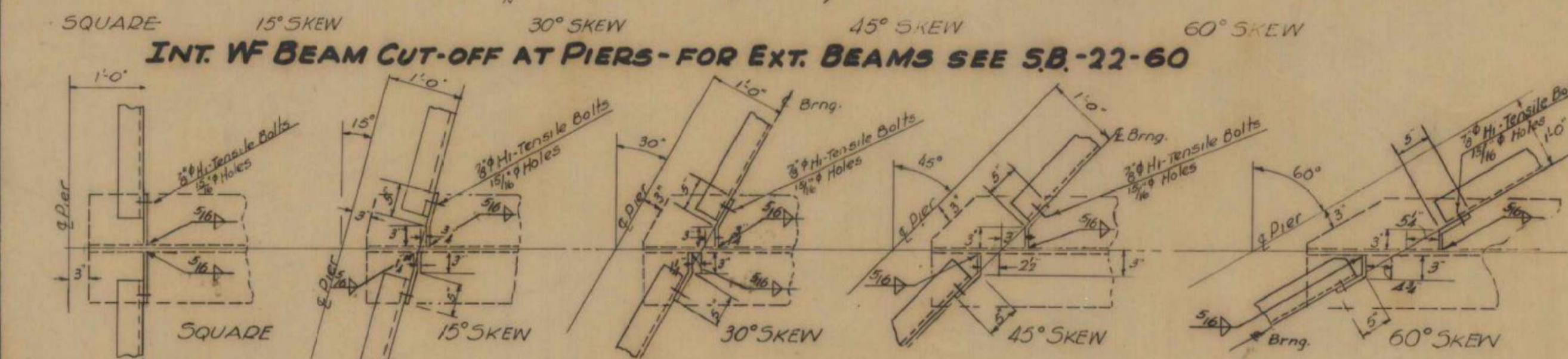
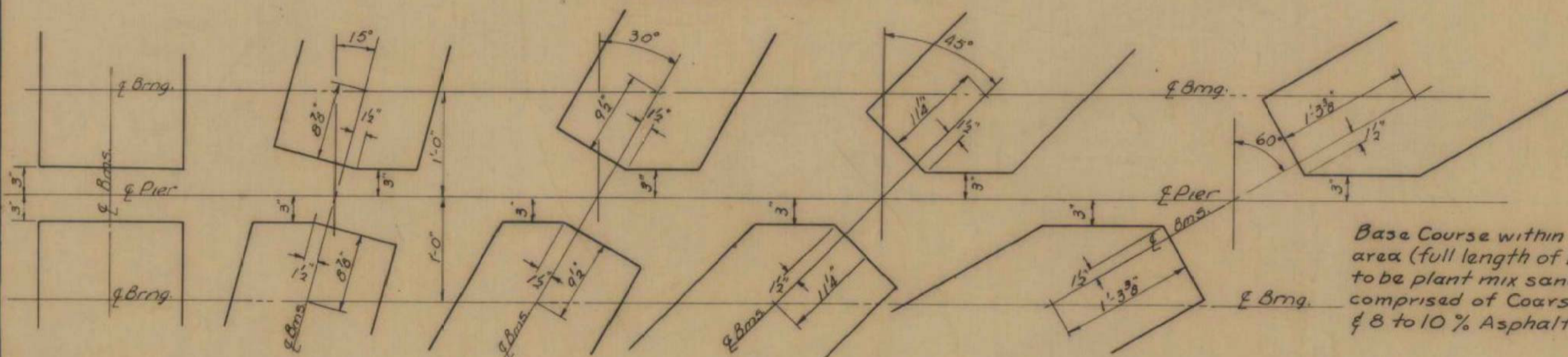
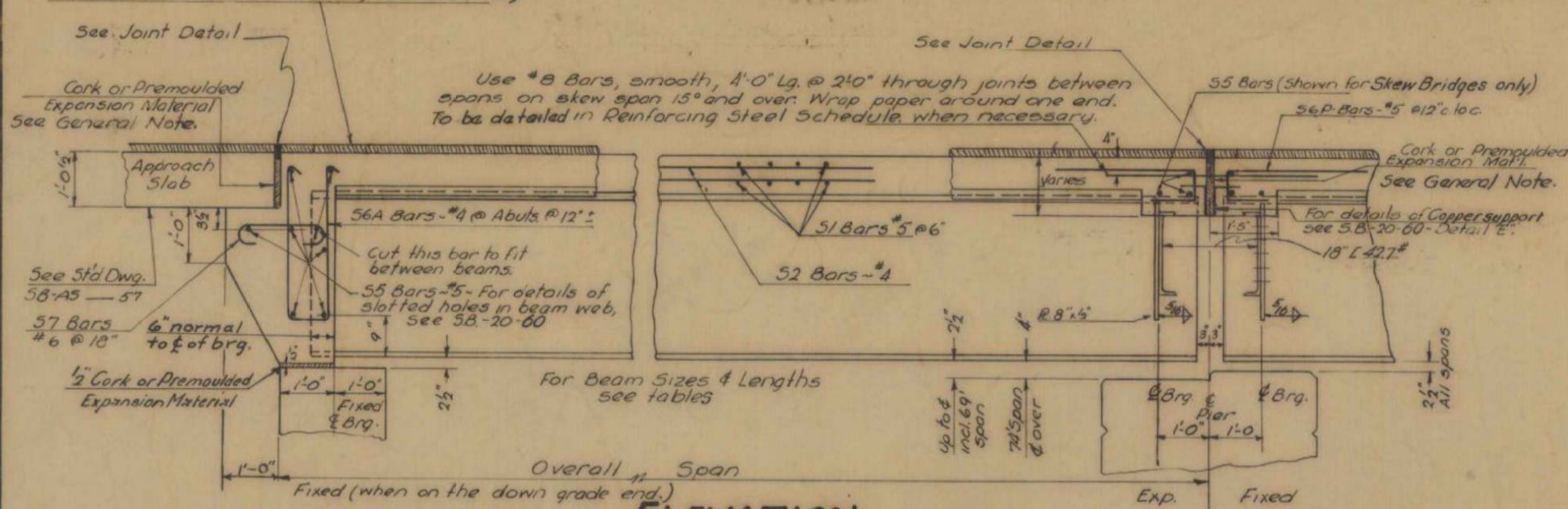
RICHMOND
IM BPNT (3)
SHEET 13 OF 18
ALL BRIDGES
FOR REFERENCE ONLY

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-30-60

VOID
Reprinted
for photographing
July 1962

2" Bit Conc. Pav't Item 361-B (Mod) Item 363 (Mod)



GENERAL NOTES

The final cost 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 standard 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" L x 33 3/4" W for 30' beams and 18" L x 42 1/2" W 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 Super-elevated bridges, scuppers are placed on the low side only. Payment for scuppers shall be under item #404-Steel.

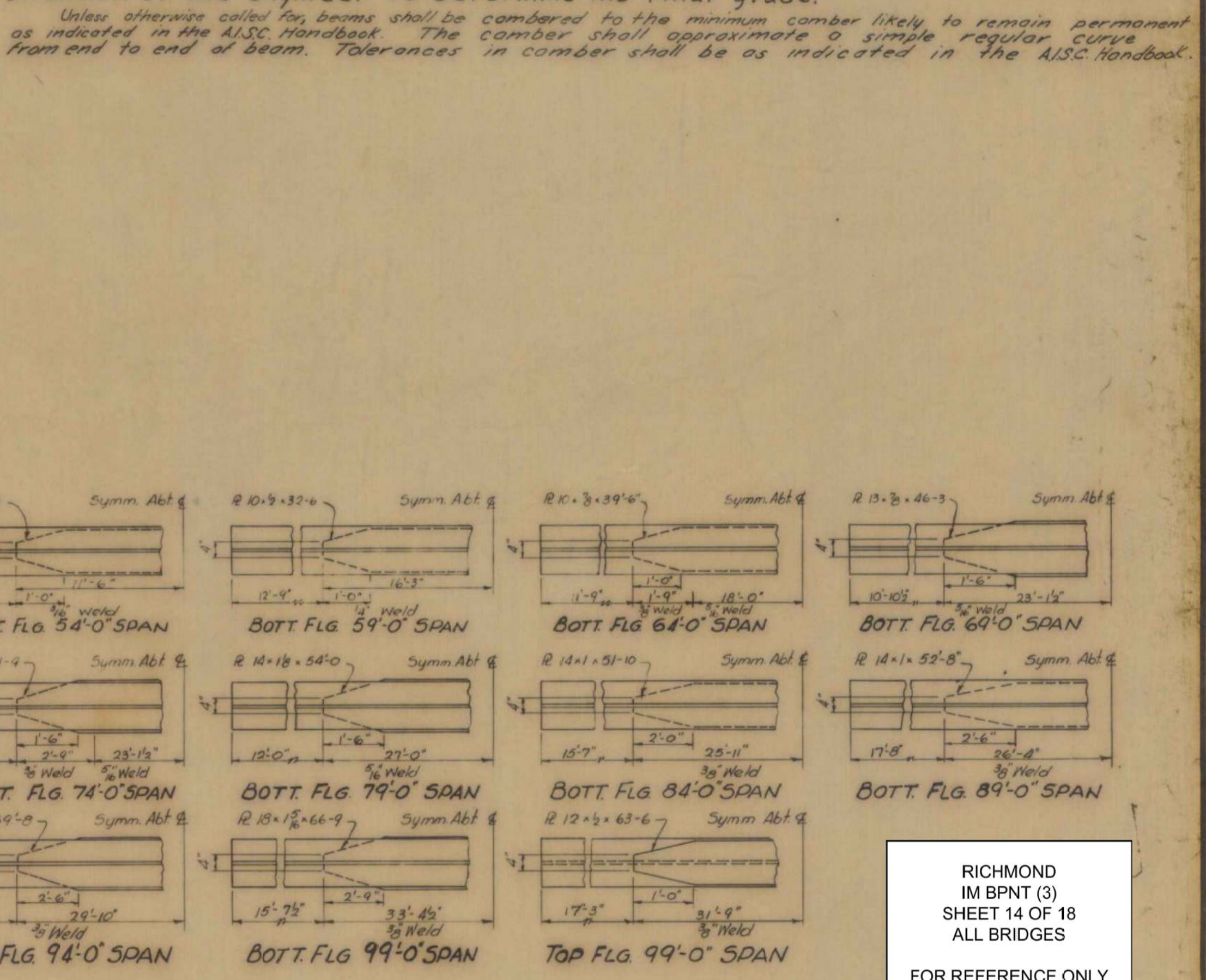
All exposed edges of concrete shall be chamfered 1" unless otherwise indicated on the plans.

All construction joints to be made as indicated on standard S.B. 20-60, details "H" & "K" unless otherwise noted. Details of 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 3/8" spiral.

Abutments (fixed end) use 5" 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 S.B. 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 AISC Handbook. The camber shall approximate a simple regular curve from end to end of beam. Tolerances in camber shall be as indicated in the AISC Handbook.



Revisions & Corrections

Changed To 12" Curb 9/7/60

Corrected Elev View 9/24/60

Added Joint Detail & Exp. Mat. Note 12/3/60

Corrected Joint Filler to item 372 3/2/61

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

Approved: 13 July 1960

Chief Engineer

DETAILS OF WF BEAM BRIDGES

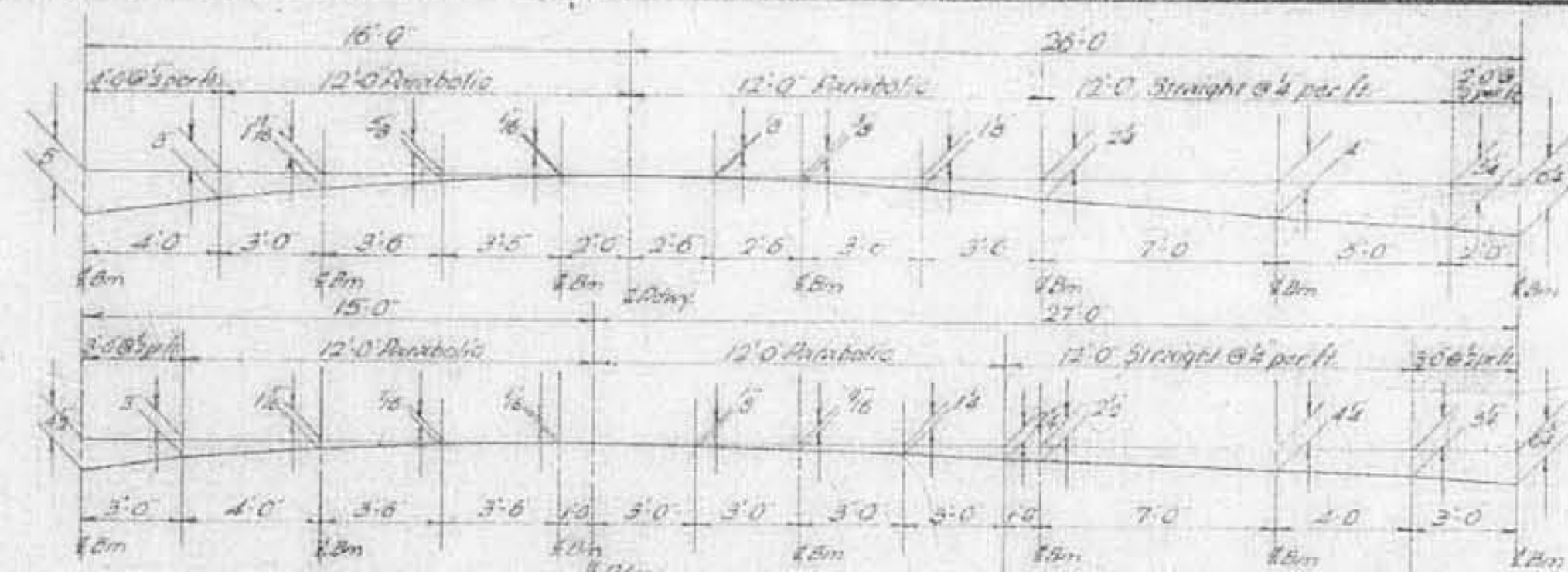
34' TO 44' NON COMPOSITE ~ 49' TO 99' COMPOSITE

DEPARTMENT OF HIGHWAYS

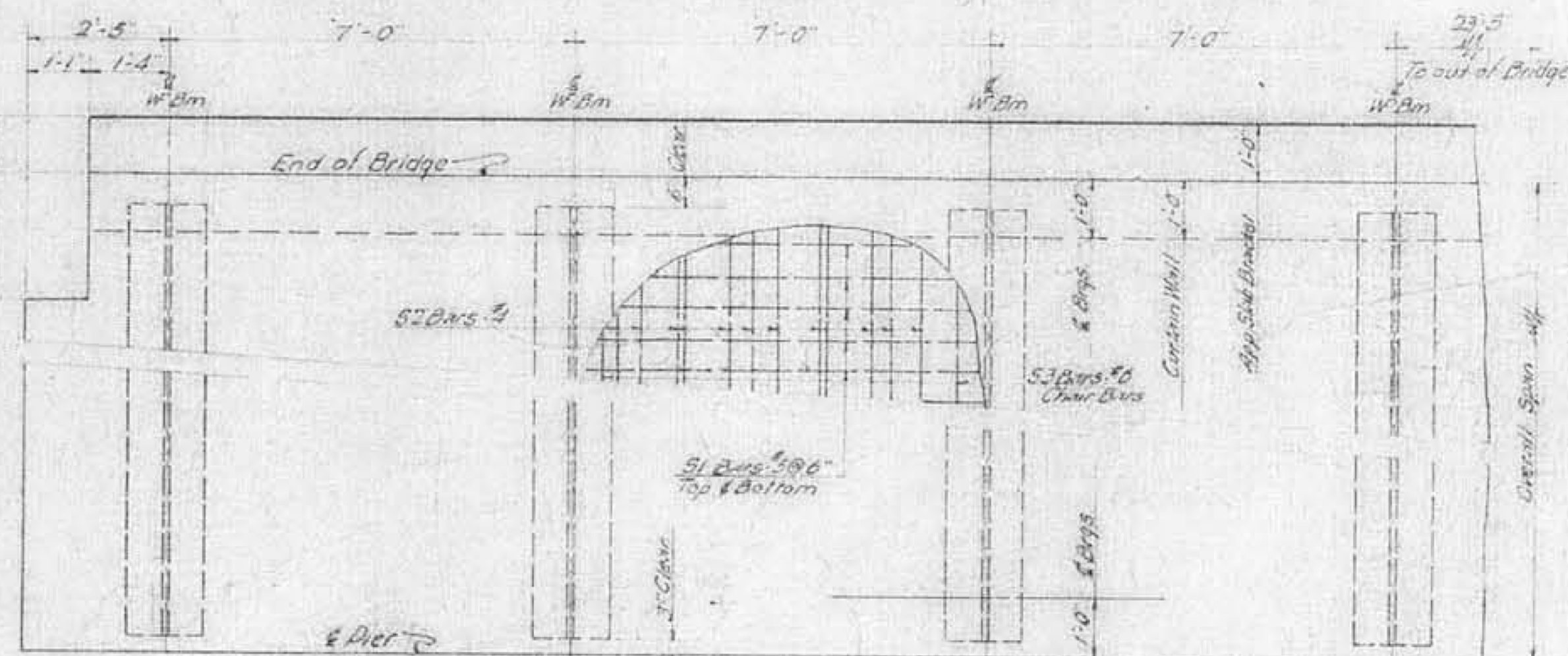
STANDARD STRUCTURES

SCB-D-60

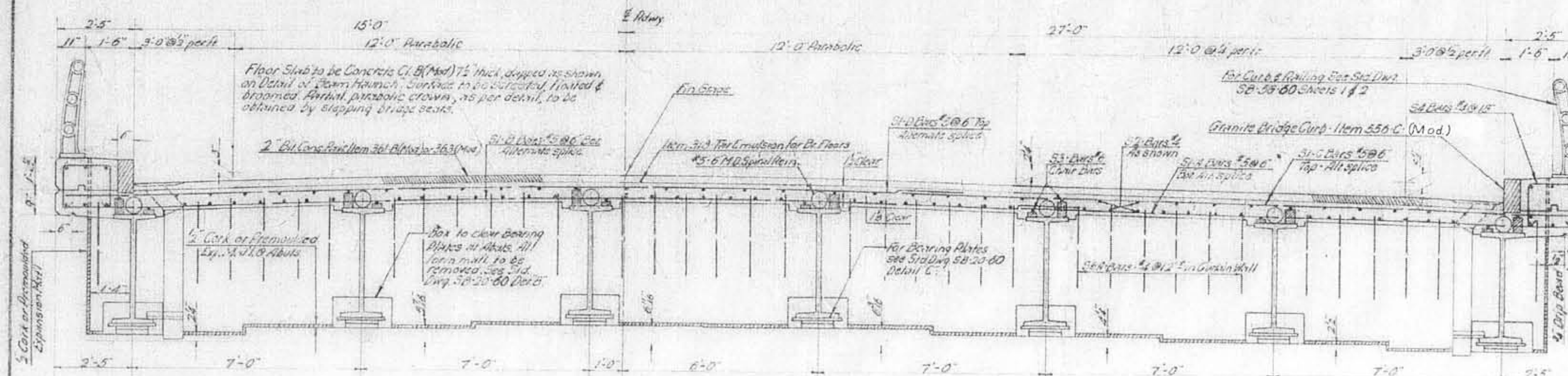
RICHMOND
IM BPNT (3)
SHEET 14 OF 18
ALL BRIDGES
FOR REFERENCE ONLY



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 - E to E 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 W Beams	36W300	36W300	36W300	36W245	36W164	36W170	36W160	36W150	36W150	36W150	36W150	36W150	36W130	36W110																	
Lyth. & Size Bot. Cover &	68'-8 1/2"	59'-8 1/2"	52'-8 1/2"	51'-10 1/2"	54'-0 1/2"	51'-8 1/2"	53'-8 1/2"	50'-8 1/2"	48'-8 1/2"	46'-8 1/2"	44'-8 1/2"	42'-8 1/2"	40'-8 1/2"	38'-8 1/2"																	
Lyth. & Size Top Cover &	68'-8 1/2"	59'-8 1/2"	52'-8 1/2"	51'-10 1/2"	54'-0 1/2"	51'-8 1/2"	53'-8 1/2"	50'-8 1/2"	48'-8 1/2"	46'-8 1/2"	44'-8 1/2"	42'-8 1/2"	40'-8 1/2"	38'-8 1/2"																	
Dead Load Deflection	5"	2 1/2"	2 1/2"	2 1/2"	1 1/2"	1 1/2"	1 1/2"	1"	7/8"	5/8"	5/8"	5/8"	5/8"	5/8"																	
Diameter of Spiral Bars																															
Mean Diameter of Spiral																															
Spiral Pitch 0'-10" from Brng	Double #5	Double #5	Double #6	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5																	
10'-20" or E Span	Double #5	Double #5	Double #7	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5	Double #5																	
20'-30"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"																	
30'-40"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	6"	6"	7"	7 1/2"	5 1/2"	6"	6 1/2"	6 1/2"	6 1/2"	6 1/2"																	
40'-E Span	7"	7"	8"	8"																											
Lyth. of 2" Studs (All to Spirals)	65' Long unless otherwise specified on the Plans. 2 Studs required per Pitch																														
Total Struct. Steel (1 Span) (lbs)	269,740	237,590	218,700	172,320	138,420	115,910	97,140	82,550	72,740	65,010	58,080	52,730	48,290	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	264	264	264	264	264	264	264																	
S3	42	42	42	42	42	42	42	42	42	42	42	42	42	42																	
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	3,480	3,310	3,250	3,070	2,920	2,740	2,600	2,360	2,170																				
Total Concrete Class B (Cords)	151	144	137	131	124	117	110	103	95	89	82	75	67	59																	
Total Weight Bitum. Conc. Pav. (Tons)	59	56	53	50	47	44	41	38	35	32	29	26	23	20																	
Tar Emulsion for Bridge Decks (Gals)	185	176	166	157	148	138	129	120	110	101	92	82	73	64																	
Approx Quantity 2" x 6" Studs	4,150	4,050	3,950	3,800	3,730	3,500	3,300	3,100	3,000	2,700	2,500																				

REINFORCING STEEL SCHEDULE		51-A #5	17'-3"	Straight	51-B #5	31'-3"	Straight	51-C #5	20'-9"	Straight	51-D #5	27'-9"	Straight
55	#5	23'-3"	Straight										
Span		52'-6"	53'-6"	54'-6"	55'-6"	56'-6"	57'-6"	58'-6"	59'-6"	60'-6"	61'-6"	62'-6"	63'-6"
Length		33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"
34		33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"	33'-6"
39		20'-3"	20'-6"	20'-9"	21'-0"	21'-3"	21'-6"	21'-9"	22'-0"	22'-3"	22'-6"	22'-9"	23'-0"
44		22'-9"	23'-0"	23'-3"	23'-6"	23'-9"	24'-0"	24'-3"	24'-6"	24'-9"	25'-0"	25'-3"	25'-6"
49		25'-3"	25'-6"	25'-9"	26'-0"	26'-3"	26'-6"	26'-9"	27'-0"	27'-3"	27'-6"	27'-9"	28'-0"
54		27'-9"	28'-0"	28'-3"	28'-6"	28'-9"	29'-0"	29'-3"	29'-6"	29'-9"	30'-0"	30'-3"	30'-6"
59		30'-3"	30'-6"	30'-9"	31'-0"	31'-3"	31'-6"	31'-9"	32'-0"	32'-3"	32'-6"	32'-9"	33'-0"
64		32'-9"	33'-0"	33'-3"	33'-6"	33'-9"	34'-0"	34'-3"	34'-6"	34'-9"	35'-0"	35'-3"	35'-6"
69		34'-3"	34'-6"	34'-9"	35'-0"	35'-3"	35'-6"	35'-9"	36'-0"	36'-3"	36'-6"	36'-9"	37'-0"
74		36'-0"	36'-3"	36'-6"	36'-9"	37'-0"	37'-3"	37'-6"	37'-9"	38'-0"	38'-3"	38'-6"	38'-9"
79		37'-6"	38'-0"	38'-3"	38'-6"	38'-9"	39'-0"	39'-3"	39'-6"	39'-9"	40'-0"	40'-3"	40'-6"
84		39'-3"	39'-6"	39'-9"	40'-0"	40'-3"	40'-6"	40'-9"	41'-0"	41'-3"	41'-6"	41'-9"	42'-0"
89		41'-0"	41'-3"	41'-6"	41'-9"	42'-0"	42'-3"	42'-6"	42'-9"	43'-0"	43'-3"	43'-6"	43'-9"
94		42'-6"	42'-9"	43'-0"	43'-3"	43'-6"	43'-9"	44'-0"	44'-3"	44'-6"	44'-9"	45'-0"	45'-3"
99		44'-3"	44'-6"	44'-9"	45'-0"	45'-3"	45'-6"	45'-9"	46'-0"	46'-3"	46'-6"	46'-9"	47'-0"

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

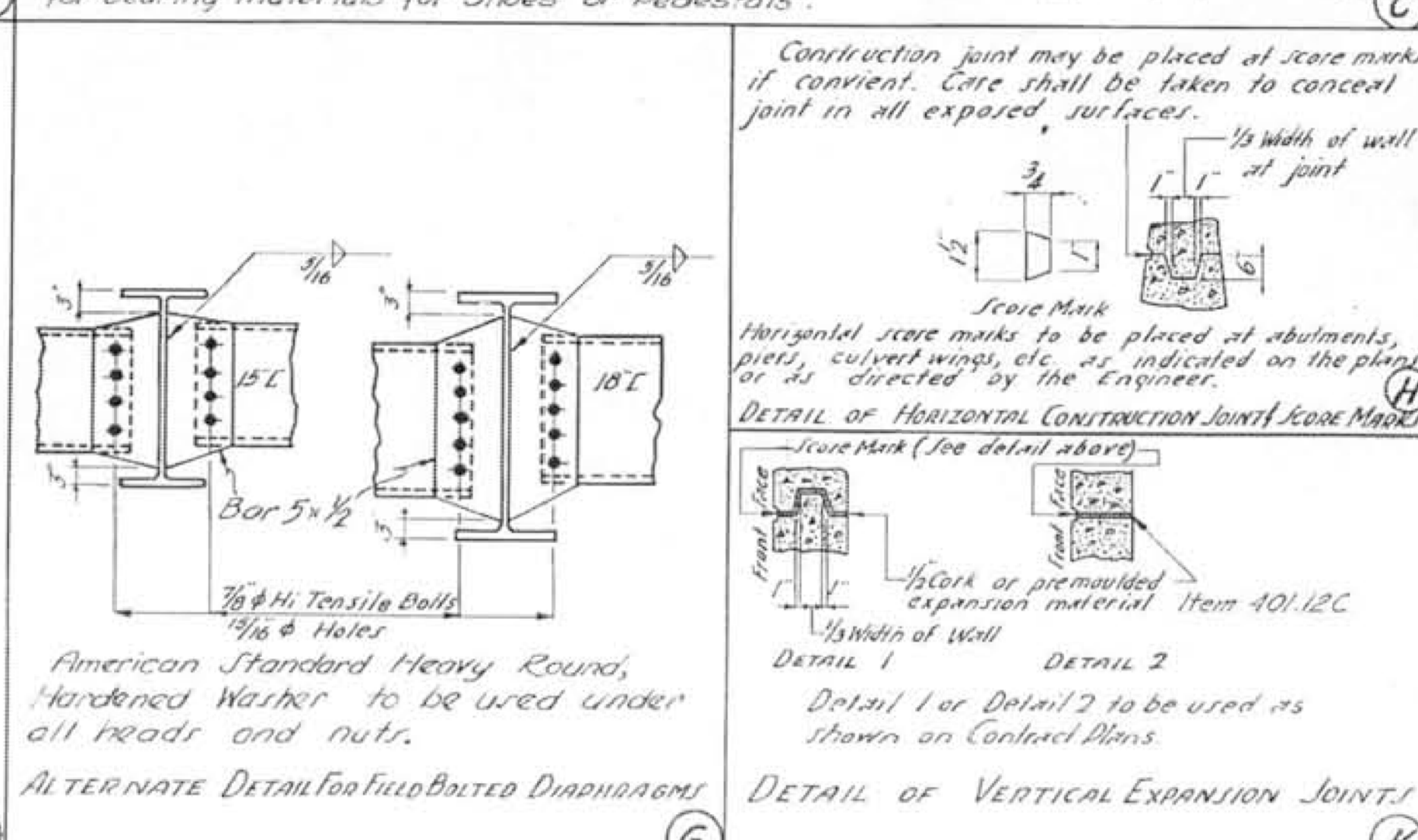
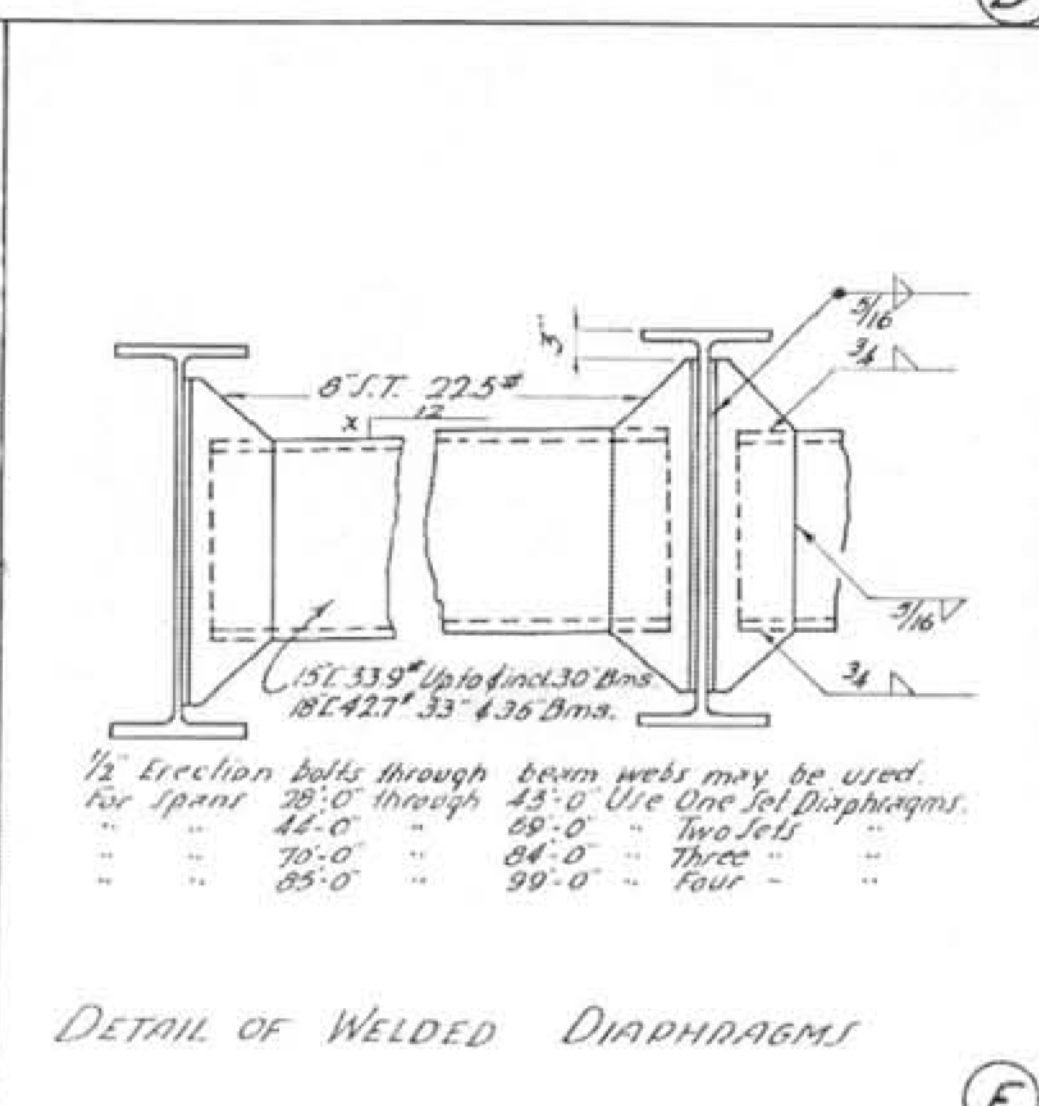
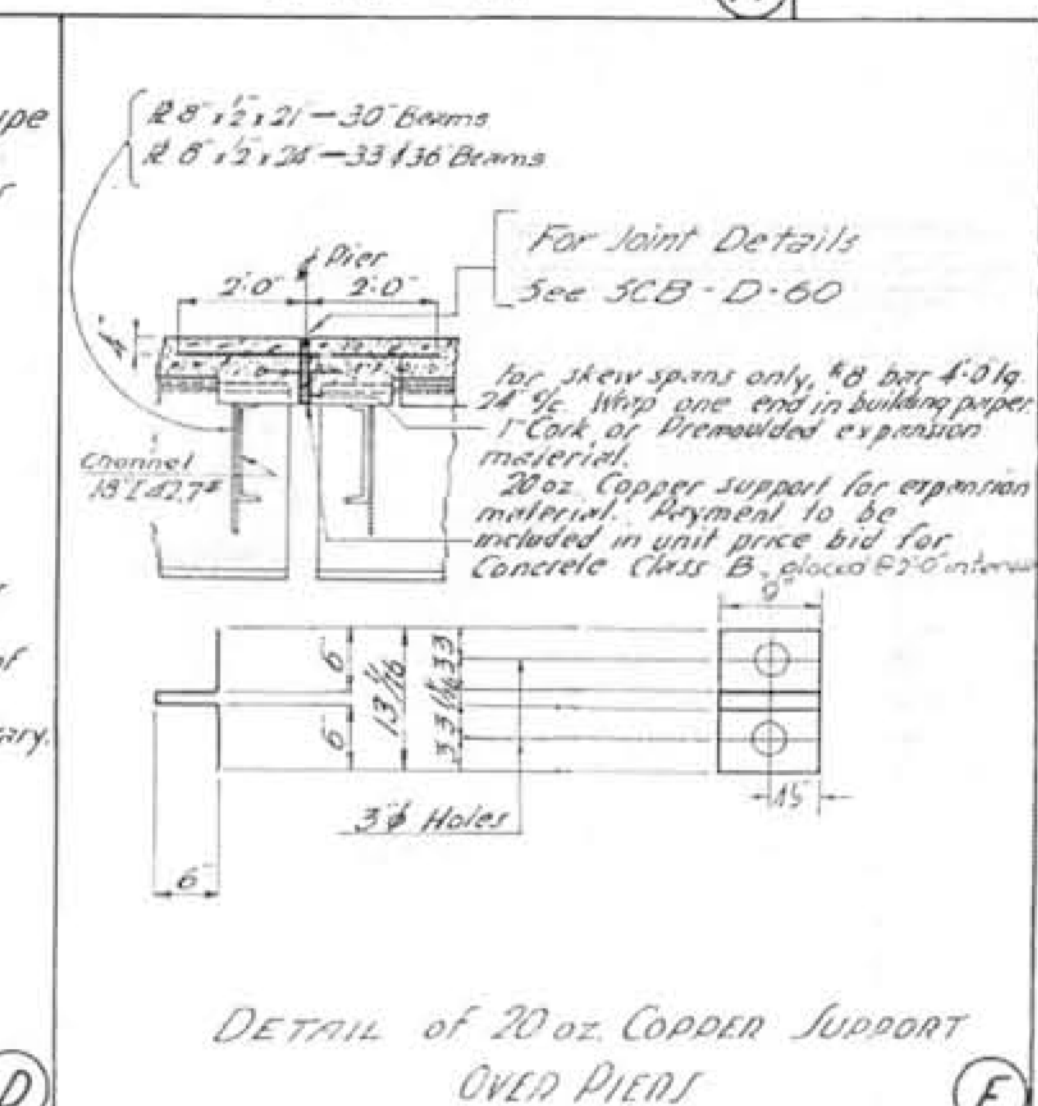
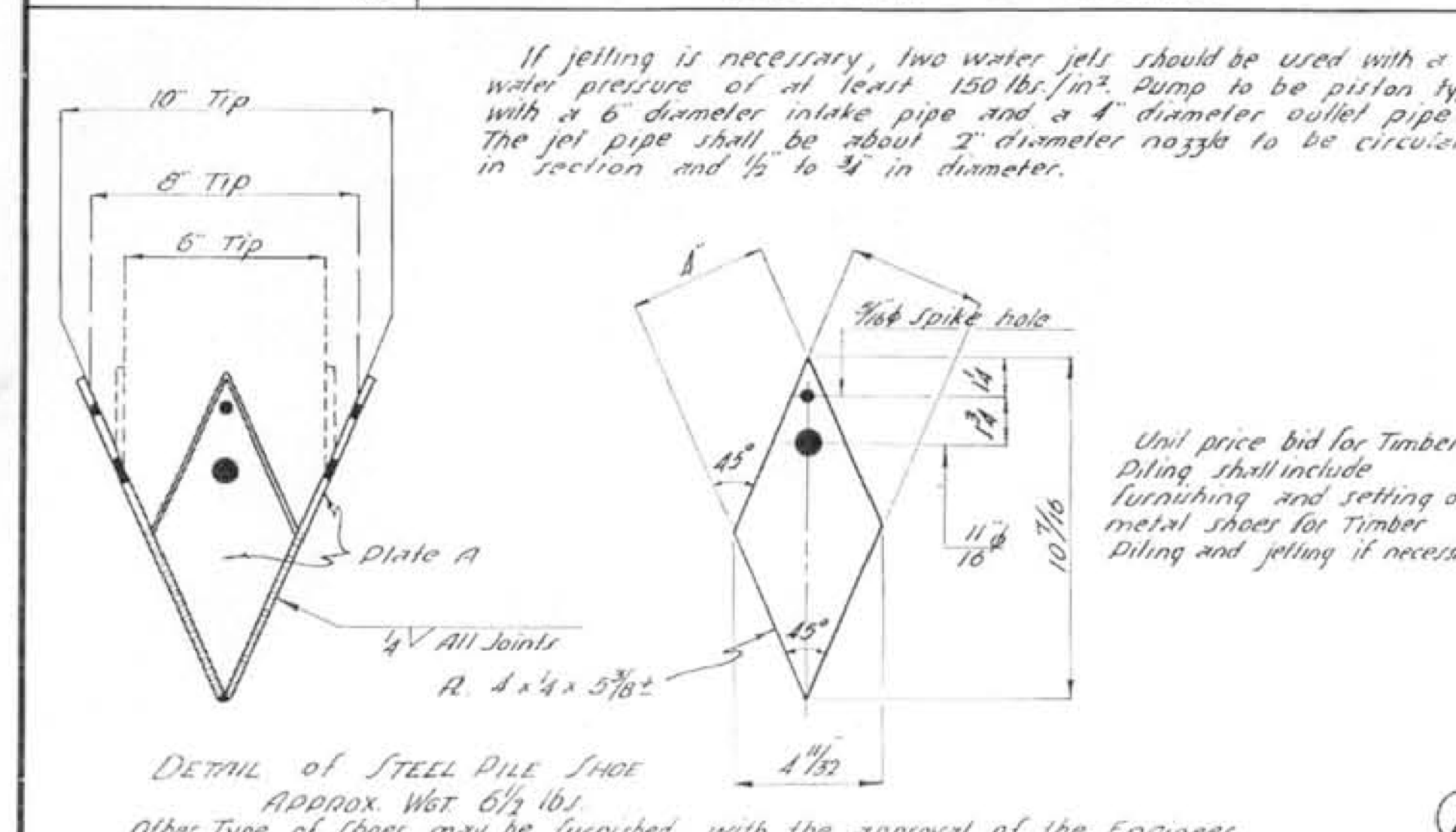
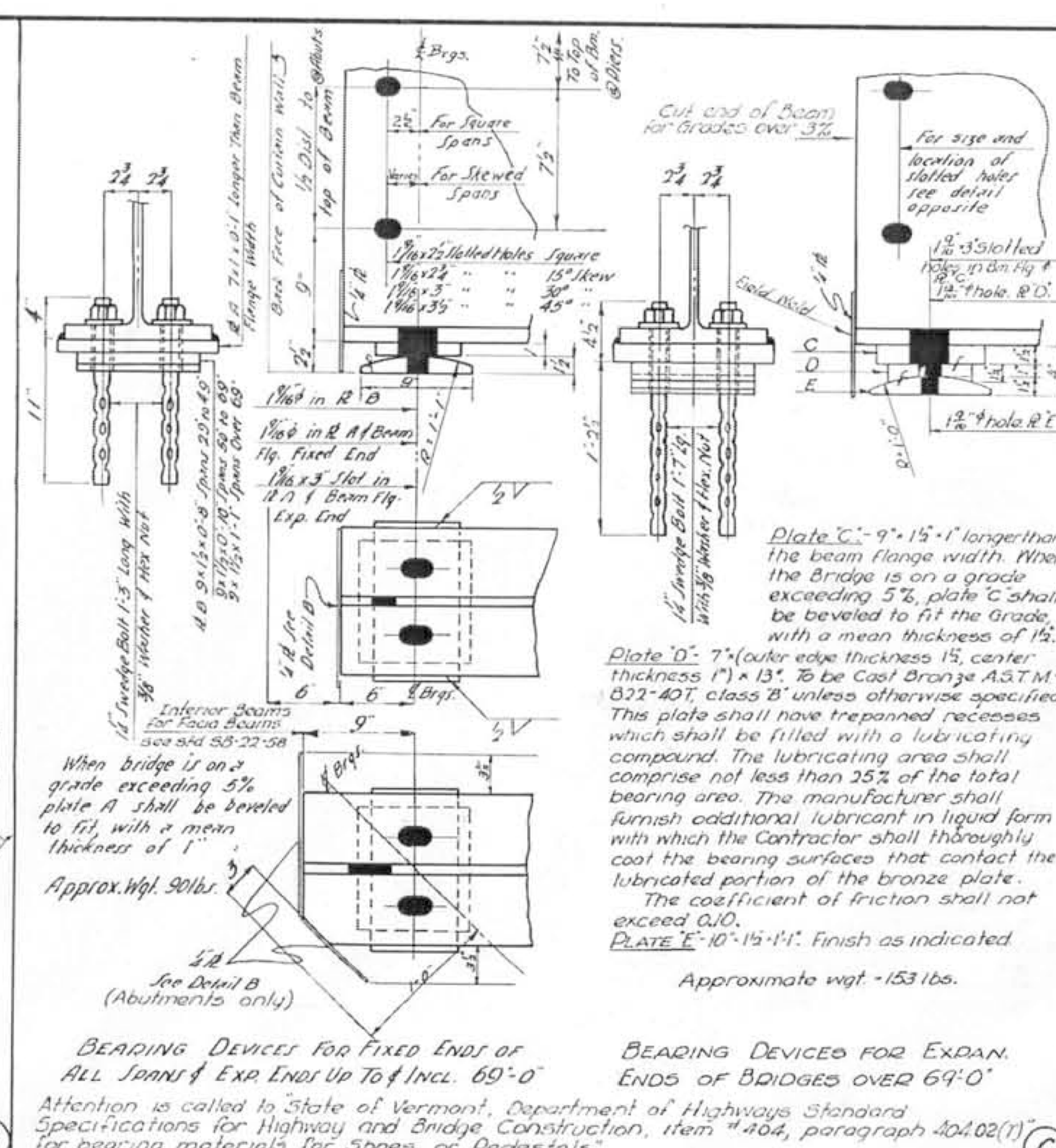
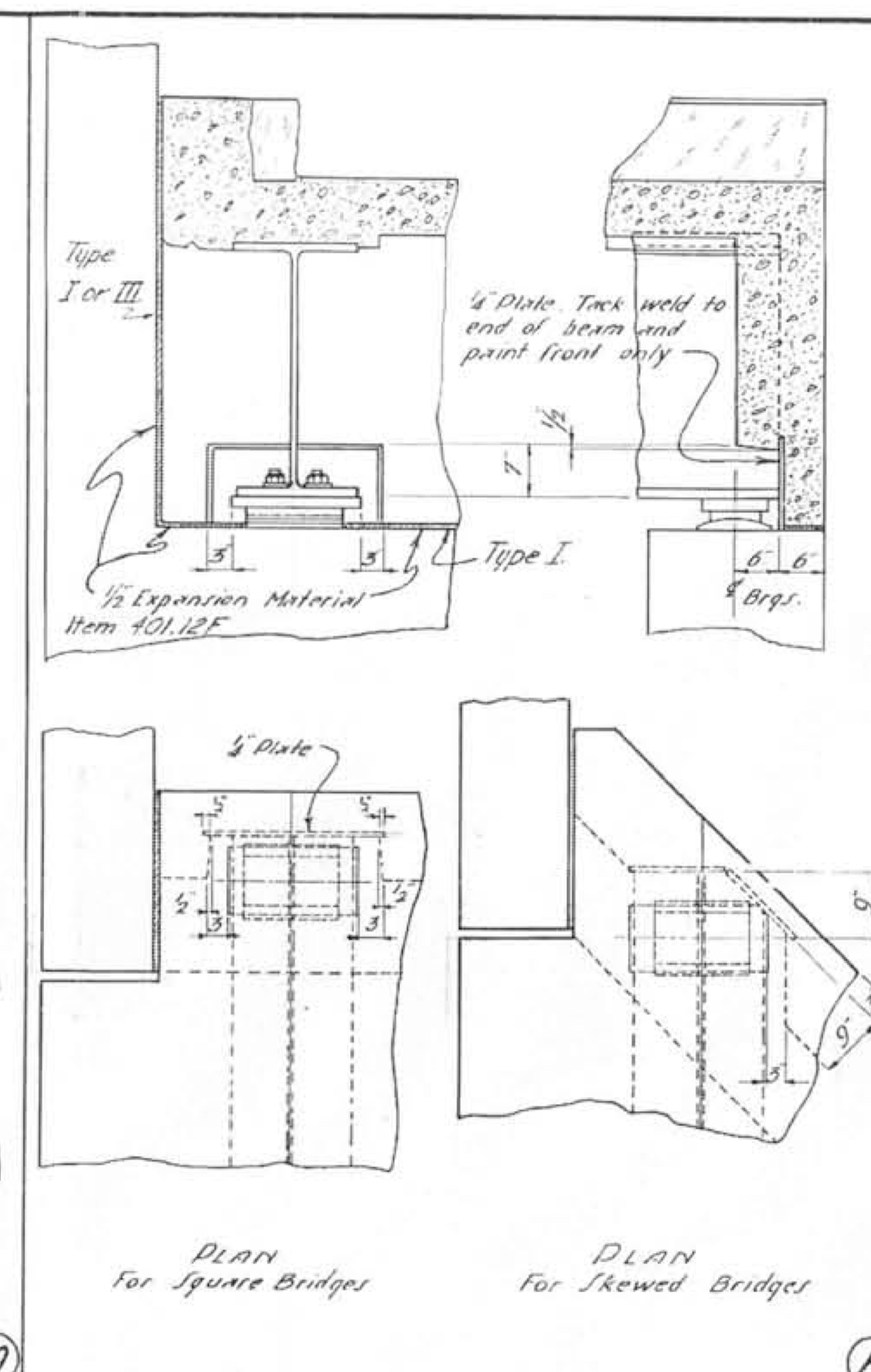
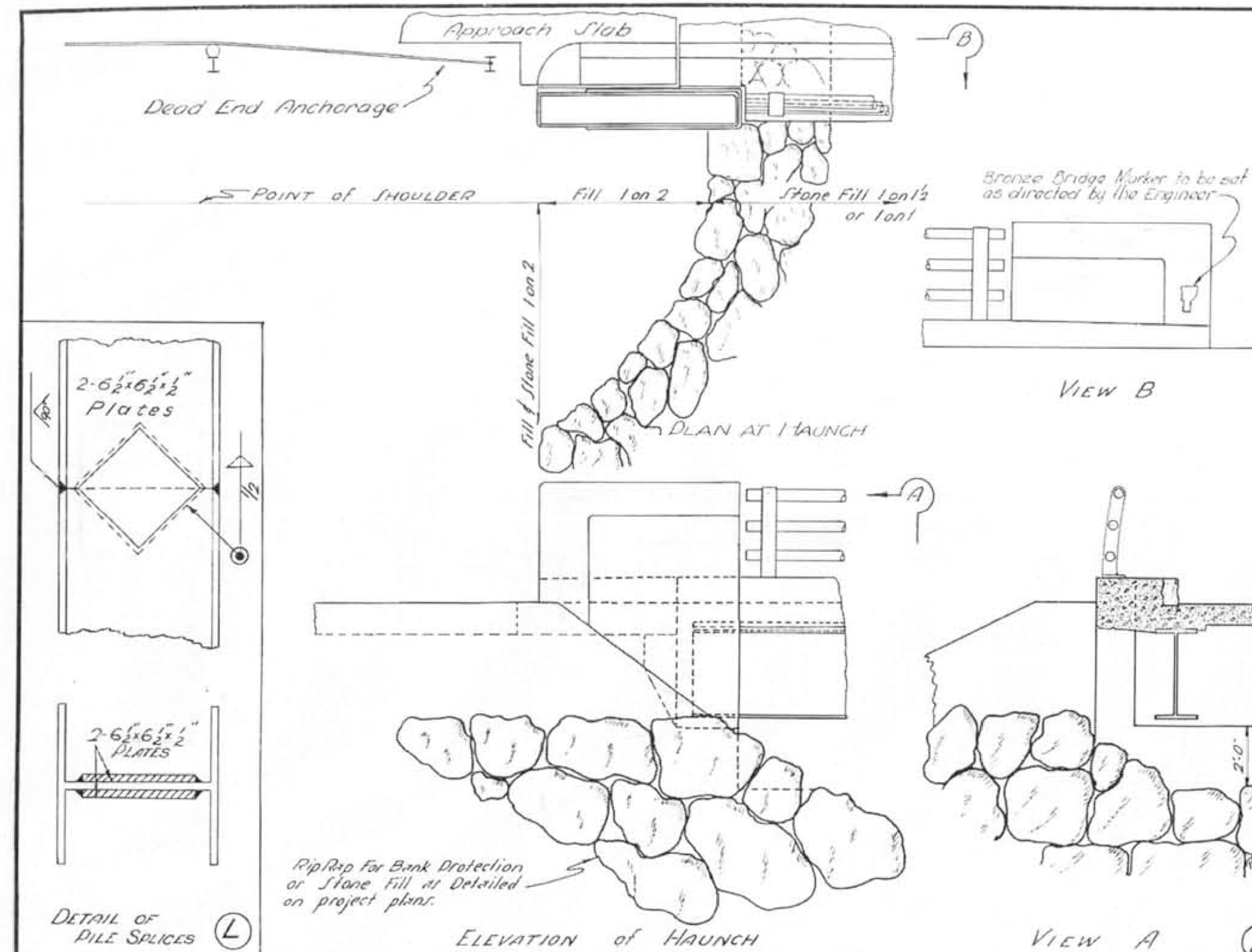
Drawn By: A.B.M. 6-17-60
Traced By: A.B.M. 6-17-60
Checked By: R.T.B. & R.S.H. July 1960
Correct: 13 July 1960
Bridge Engineer
Approved: 13 July 1960
Chief Engineer

TYPICAL SECTION, PLAN VIEW, & QUANTITIES
42 FOOT ROADWAY W/ BEAM BRIDGES
34-44 NON COMPOSITE, 49-99 COMPOSITE
FOR ADDITIONAL DETAILS SEE STANDARD SCB-D-60

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

SCB-42-60

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



REVISIONS & CORRECTIONS
Revised July 1962

Drawn By L.M. Burn 2-36
Traced By R.P. MacDougall 2-36
Checked By L.L. Hubbard 2-36

CORRECT 13 July 1960
L.M. Burn
BRIDGE ENGINEER

APPROVED 13 July 1960
O. ST. Louis
CHIEF ENGINEER

CONSTRUCTION DETAILS FOR WF BEAM BRIDGES

DEPARTMENT OF HIGHWAYS
STANDARD STRUCTURES

RICHMOND
IM BPNT (3)
SHEET 16 OF 18
ALL BRIDGES
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SB-20-60 235



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