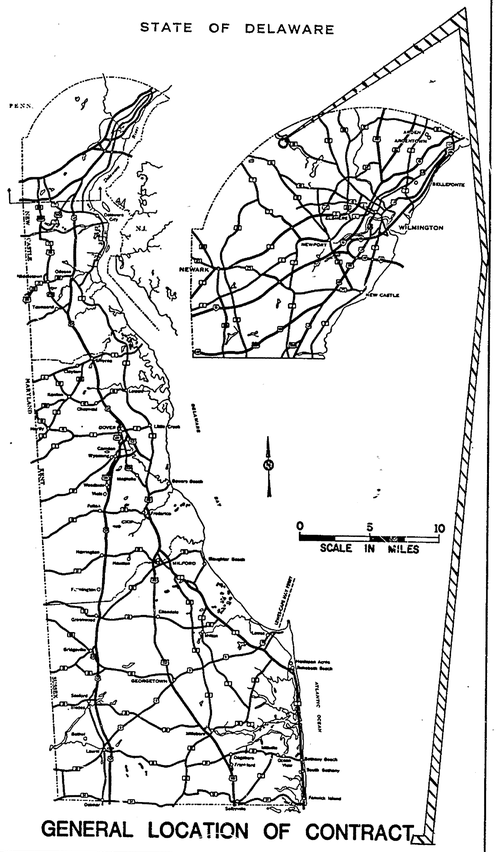
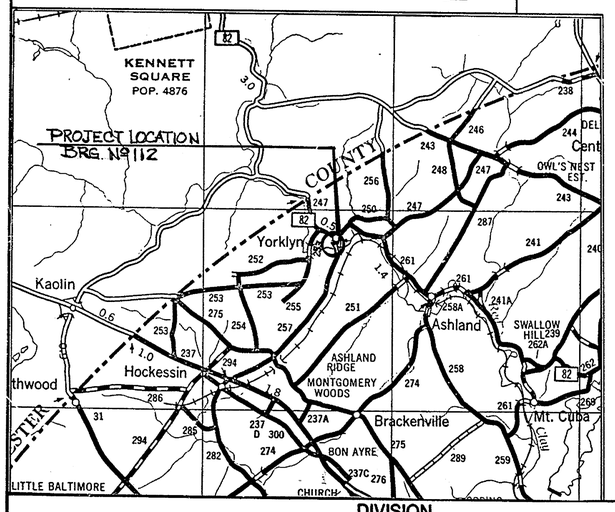


GENERAL LOCATION OF CONTRACT



THE STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SPECIFICATION AND CONSTRUCTION PLANS FOR:

BRG. NO. 112 ON N 257

OVER RED CLAY CREEK

"As Built Plans"
7/17/92 H.H.D.

CONTRACT NUMBER 89-074-04

~~**FEDERAL AID PROJECT NUMBER**~~

ROADWAY LENGTH ____ FEET= ____ MILES
STRUCTURE LENGTH 76 FEET=0.0144 MILES
TOTAL LENGTH 76 FEET=0.0144 MILES

CONTRACT	COUNTY	M.R. NO.	F.H.W.A. REG. NO.	FEDERAL AID PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
89-074-04	N.C.		3		1	25

DESIGN DESIGNATION

FUNCTIONAL CLASS ____
TYPE OF CONSTRUCTION ____
A.D.T. CURRENT ____
A.D.T. PROJECTED ____
D.H.V. PROJECTED ____
DESIGN SPEED ____
% TRUCKS ____
DIRECTION DISTRIBUTION % ____
CLEAR ZONE (S) ____

SCALES

PLAN SHEET: 1"= ____ Feet
PROFILE SHEET:
Horizontal: 1"= ____ Feet
Vertical: 1"= ____ Feet
DETAIL SHEET: 1"= ____ Feet

INDEX OF SHEETS

SHEET Nº	TABLE OF CONTENTS
1	TITLE SHEET
2	QUANTITIES AND GENERAL NOTES
3	PLAN & PROFILE, MISCELLANEOUS DETAILS
4	TYPICAL SECTIONS
5	ABUTMENT ELEVATION AND SECTION
6	ABUTMENT AND WINGWALLS DETAILS
7	STRUCTURAL STEEL PLAN AND ELEVATION
8	STRUCTURAL STEEL DETAILS
9	TIMBER DECKING PLAN
10	TIMBER DECK DETAILS
11	REINFORCEMENT BAR LISTS
12	DETOUR PLAN
13	RIGHT-OF-WAY SHEET
14 TO 16	STANDARD SHEET G-2-9, G-4-7, G-5
17 TO 25	OLD EXIST. BRIDGE PLANS (FOR INFORMATION ONLY)

MILEPOST

UTILITY LEGEND
—— AERIAL
o DPL/DST POLE
— — — UNDERGROUND SEWER (OWNER: NVP Co.)

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED ____ 19 ____

DIVISION ADMINISTRATOR

DIVISION OF HIGHWAYS

RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED	APPROVED
PROJECT ENGINEER	ROAD DESIGN ENGINEER	BRIDGE ENGINEER	DESIGN ENGINEER	DEPUTY DIRECTOR OF HIGHWAYS	DIRECTOR OF HIGHWAYS
RECOMMENDED 9/25 19 89	RECOMMENDED ____ 19 ____	RECOMMENDED 9.25 19 89	RECOMMENDED 9/25 19 89	APPROVED 9/25 19 89	APPROVED 9/26/ 19 89
SEAL (MICHAEL A. ANGELO, REGISTERED, NO. 6725, DELAWARE, PROFESSIONAL ENGINEER)	SEAL	SEAL (CHAO H. HU, REGISTERED, NO. 4274, DELAWARE, PROFESSIONAL ENGINEER)	SEAL	SEAL (Raymond H. Harbeson Jr., REGISTERED, NO. 4672, DELAWARE, PROFESSIONAL ENGINEER)	SEAL (JOHN T. DAVIS, REGISTERED, NO. 4376, DELAWARE, PROFESSIONAL ENGINEER)

BRI-112	CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
	89-074-04	N.C.	N/A	2	25

BR.112 ON N 257 OVER RED CLAY CREEK

ITEM	202000 D	** 206000 D	207000 D	210000 D	211000 D	302002 D	401002 D	401003 D	* 601002 D	601503 D	601504 D
ITEM TITLE	EXCAVATION AND EMBANKMENT	ROCK EXCAVATION FOR STRUCTURES AND TRENCHES	EXCAVATION AND BACKFILL FOR STRUCTURES	FURN BRRR TYP C FOR PIPE UTILTY TREN & STRUCT BCKF	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	GRADED AGGREGATE BASE COURSE, TYPE B	HOT-MIX, HOT LAID BIT. CONC. PAV'T., TYPE B	HOT-MIX, HOT LAID BIT. CONC. PAV'T., TYPE C	TIMBER STRUCTURES (TREATED)	GLUE LAMINATED TIMBER DECK	GLUE LAMINATED TIMBER
UNIT	C.Y.	C.Y.	C.Y.	C.Y.	L.S.	SY-IN	TON	TON	MFBM	S.F.	MFBM
SHEET NO. 001 FROM STA. BR. I-112 TO STA.	46	10	145	151	L.S.	960	20	40	1.13	1605	2.91
TOTAL	46	10	145	151	L.S.	960	20	40	1.13	1605	2.91
PROPOSAL	46	10	145	151	L.S.	960	20	40	1.13	1605	2.91

ITEM	* 602004 D	602015 D	* 604000 D	605001 D	605002 D	605522 D	605533 D	605578 D	607000 D	608000 D	712001 D
ITEM TITLE	P.C.C. MASONRY, ABUT. FOOTING, CLASS B	P.C.C. MASONRY, ABUT. ABOVE FTG., CLASS A	BAR REINFORCEMENT, EPOXY COATED	STEEL STRUCTURES	STEEL STRUCTURES (15712 PDS.)	URETHANE PAINT SYSTEM	CLEANING EXISTING STEEL STRUCTURES	REPLACING STEEL RIVETS	REMOVAL OF EXISTING MASONRY	COARSE AGGR. FOR FOUND STAB & SUBFOUND BACKFILL	RIPRAP, PLAIN
UNIT	C.Y.	C.Y.	POUND	POUND	L.S.	L.S.	L.S.	EACH	C.Y.	TON	S.Y.
SHEET NO. 001 FROM STA. BR. I-112 TO STA.	4.75	29	4077	1500	L.S.	L.S.	L.S.	450	13	10	40
TOTAL	4.75	29	4077	1500	L.S.	L.S.	L.S.	450	13	10	40
PROPOSAL	4.75	29	4077	1500	L.S.	L.S.	L.S.	450	13	10	40

ITEM	720001 D	727500 D	740500 D	741001 D	741006 D	** 742010 D	759002 D	762001 D	762002 D	763000 D	763500 D
ITEM TITLE	GALVANIZED STEEL BEAM GUARDRAIL (STEEL POST)	MONUMENTS	EROSION CONTROL, SILT FENCE	TREE REMOVAL 6" TO 10.9"	TREE REMOVAL 31" TO 36.9"	FLAGMAN, NEW CASTLE	FIELD OFFICE, TYPE II	SAW CUTTING, HOT MIX	SAW CUTTING, CONCRETE (FULL DEPTH)	INITIAL EXPENSE	MAINTENANCE OF TRAFFIC
UNIT	L.F.	EACH	L.F.	EACH	EACH	HOUR	L.S.	L.F.	L.F.	L.S.	L.S.
SHEET NO. 001 FROM STA. BR. I-112 TO STA.	37.5	3	150	2	1	50	L.S.	60	37	L.S.	L.S.
TOTAL	37.5	3	150	2	1	50	L.S.	60	37	L.S.	L.S.
PROPOSAL	37.5	3	150	2	1	50	L.S.	60	37	L.S.	L.S.

* FIXED QUANTITY ITEM : REFER TO SECTION 109.06 OF STANDARD SPECIFICATIONS
** FIXED PRICE ITEM.
D 100% STATE FUNDED BRIDGE CONSTRUCTION

GENERAL NOTES

DESIGN CRITERIA
1989 AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

SPECIFICATIONS
MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE "DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS" DATED JULY 1985, WITH CURRENT MODIFICATIONS, ADDITIONS AND SPECIAL PROVISIONS.

ELEVATIONS
ALL ELEVATIONS ARE TAKEN FROM EXISTING PLANS.

PROJECT NOTES

LOCATION
REPLACEMENT OF BRIDGE I-112 ON N.C. 257 OVER RED CLAY CREEK, NEW CASTLE COUNTY, DELAWARE.

LOADING
AASHTO HS25-44 OR DELAWARE LEGAL LOAD FOR LIVE LOAD.
50 P.C.F. FOR TIMBER DEAD LOAD.

STRESS GRADE
ALL GLUE LAMINATED TIMBER SHALL BE 2,400 PSI. MINIMUM ALLOWABLE BENDING STRESS.

PORTLAND CEMENT CONCRETE
STRUCTURAL ELEMENTS OF PORTLAND CEMENT CONCRETE SHALL BE AS NOTED:
(F'C = 28 DAY COMPRESSIVE STRENGTH)
CLASS A - ABUTMENTS, WINGWALLS.(F'C = 4500 P.S.I.)
CLASS B - FOOTING (F'C = 3000 P.S.I.)
MIX REQUIREMENTS SHALL CONFORM TO SECTION 812 OF THE SPECIFICATIONS.
ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.

BACKWALL AND WINGWALL WITH FLARED END SHALL BE POURED MONOLITHICALLY.

REINFORCED STEEL
REINFORCED STEEL SHALL CONFORM TO AASHTO M31, GRADE 60. REINFORCED STEEL CLEAR COVER SHALL BE 2" ABOVE FOOTING AND 3" IN THE FOOTING, UNLESS OTHERWISED NOTED.

ALL REINFORCED STEEL IS TO BE EPOXY COATED AND SHALL CONFORM TO AASHTO M284.

STEEL STRUCTURES
AFTER REMOVAL OF ALL STEEL AS SHOWN ON THE PLAN SHEETS AND THE BLAST CLEANING OF THE REMAINING STEEL, A VISUAL INSPECTION SHALL BE CONDUCTED TO DETERMINE WHICH REMAINING RIVETS SHALL BE REPLACED AS PER SECTION 605578 OF THE SPECIAL PROVISIONS. RIVETS REPLACED IN THIS MANNER SHALL BE PAID FOR UNDER CONTRACT BID ITEM 605578. APPROX. 450 RIVETS SHALL BE REPLACED WITH 3/4" DIA. BOLTS.

UTILITIES
BEFORE EXCAVATION IS STARTED IN AREAS OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL GIVE NOTIFICATION BY TELEPHONE BY CALLING "MISS UTILITY".
TELEPHONE (1-800) 282-8555.

ALL UTILITIES PLOTTED ON PLAN SHEETS ARE FROM THE BEST AVAILABLE INFORMATION. ANY CONFLICTS OF THESE UTILITIES WITH PROPOSED CONSTRUCTION SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER AND THE UTILITY COMPANY INVOLVED.

DIMENSIONS
CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.

TRAFFIC
THE CONTRACTOR AND ALL OTHERS SHALL PERFORM ALL WORK IN A MANNER THAT WILL INSURE THE LEAST PRACTICABLE OBSTRUCTION TO TRAFFIC CONSISTENT WITH SAFETY AND SHALL COMPLY WITH THE MANUAL TITLED, "DELAWARE TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS"(AS REVISED DECEMBER 1987). ALL CONSTRUCTION SAFETY EQUIPMENT SUCH AS SIGNS, TYPE II & III BARRICADES AND DRUMS SHALL MEET THE NEW SPECIFICATIONS. MAINTENANCE OF TRAFFIC SHALL BE AS PER CASE XV-A OF THE MANUAL. THE CONTRACTOR SHALL MAINTAIN AND BE RESPONSIBLE FOR ALL SIGNS AND TRAFFIC CONTROL DEVICES AND SHALL REPLACE ANY SIGNS REMOVED OR DAMAGED DURING CONSTRUCTION. THE DEPARTMENT WILL SET UP A SIGNED DETOUR ROUTE.

EROSION CONTROL
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE "DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK" DATED 1980.

SILT FENCE SHALL BE PLACED ON THE PERIMETER OF THE PROJECT SITE, ALONG THE LIMITS OF CONSTRUCTION LINE, OR AS DIRECTED BY THE ENGINEER TO PREVENT SEDIMENT FROM BEING CARRIED INTO THE DRAINAGE SYSTEM, AND OFF-SITE.

SILT FILTER FENCE OR STRAW SHALL BE INSPECTED AFTER EACH RAIN, AND SHALL BE REPAIRED OR REPLACED PROMPTLY AS NEEDED. ACCUMULATED SEDIMENT SHALL BE PERIODICALLY REMOVED. PAYMENT FOR ANY EXCAVATION OF SEDIMENT SHALL BE INCIDENTAL TO CONTRACT BID ITEM 740500.

REMOVAL OF STRUCTURES AND OBSTRUCTIONS
THE EXISTING STRUCTURE WILL BE REMOVED AS NOTED ON THE PLAN SHEETS.

MISCELLANOUS
1) ALL TREES TO BE REMOVED SHALL BE NOTED ON THE PLAN SHEETS.

2) ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AS DIRECTED BY THE ENGINEER IN THE FIELD. PAYMENT SHALL BE INCIDENTAL TO THE CONTRACT.

LAMINATED DECK
THE CONTRACTOR SHALL DETERMINE WHETHER THE DECKING PANELS SHALL BE PRE-DRILLED OR DRILLED IN THE FIELD. THE COST FOR FIELD DRILLING SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR SECTION 601503.

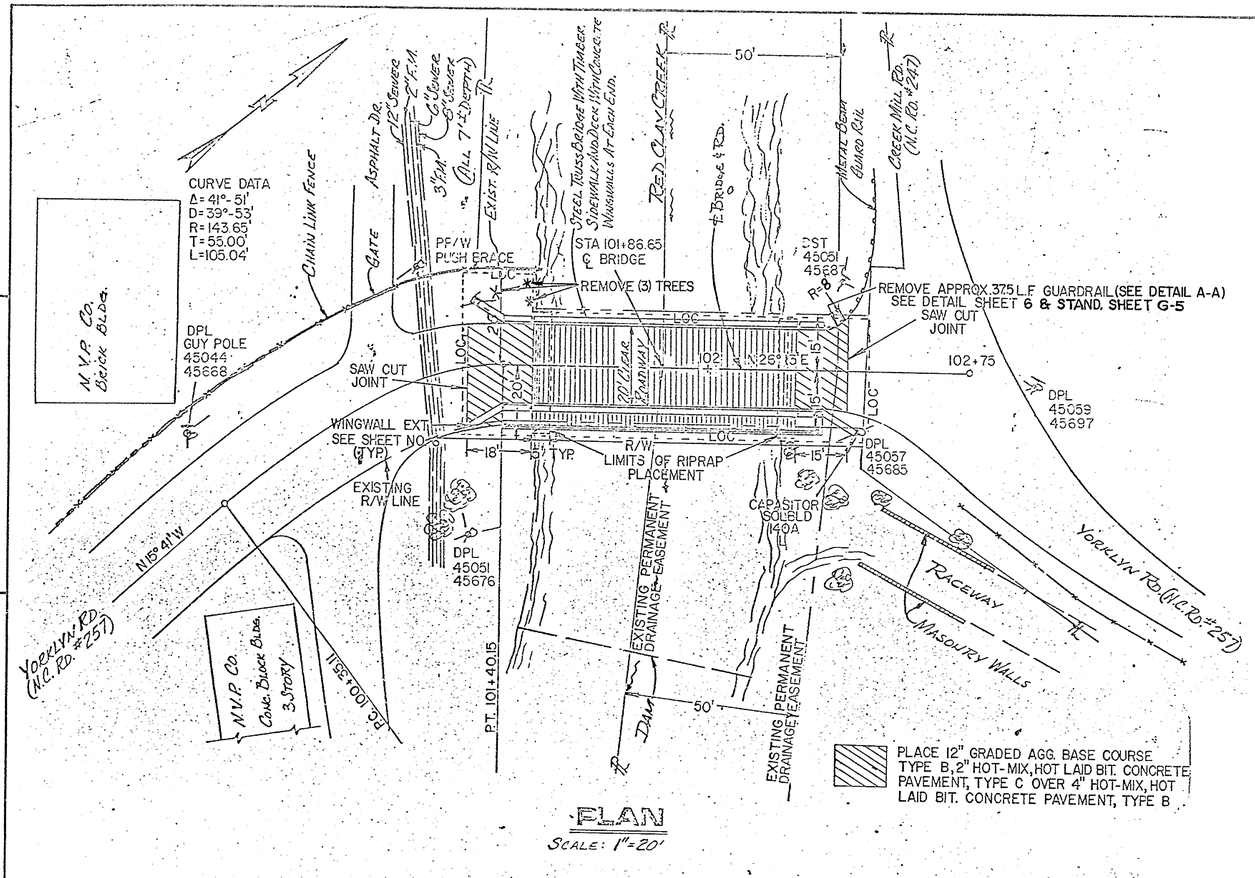
ALL CUTS, ABRASIONS, AND HOLES BORED AFTER TREATMENT SHALL BE SATURATED WITH COPPER NAPTHINATE USING A BRUSH, ROLLER, OR SPRAYER, WHICHEVER IS MOST APPLICABLE.

EXISTING PLAQUES ON NORTH AND SOUTH ENDS OF TRUSS SHALL BE REMOVED AND CLEANED. PLAQUES ARE TO BE RESET AFTER THE TRUSS HAS BEEN PAINTED. PAYMENT SHALL BE INCIDENTAL TO CONTRACT ITEM 605533.

PRELIMINARY TRACING T.G. DESIGN T.G. CHECKED M.A.A.

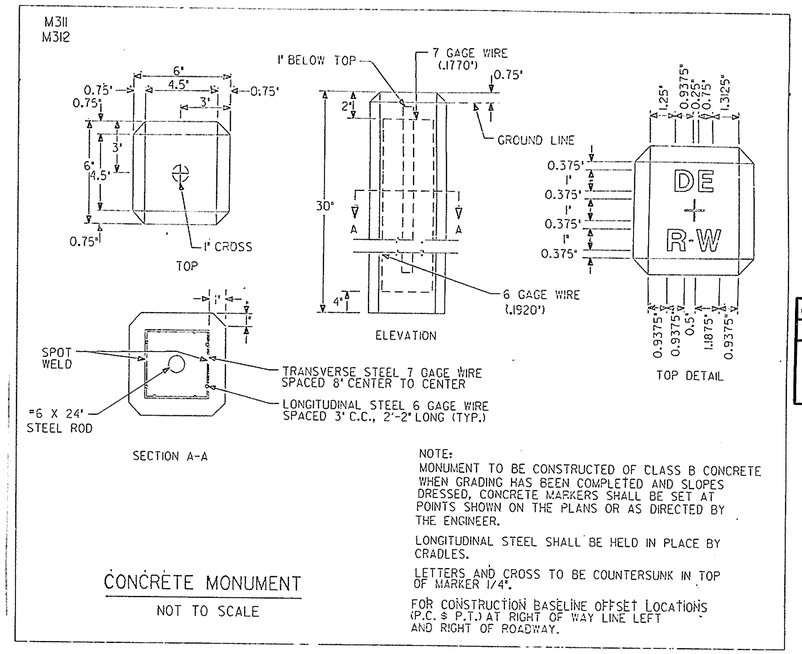
CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
89-074-04	N.C.		3	25

BRG. NO. 112 ON RD. NO. N 257 OVER RED CLAY CREEK



PLAN

SCALE: 1"=20'



CONCRETE MONUMENT

NOT TO SCALE

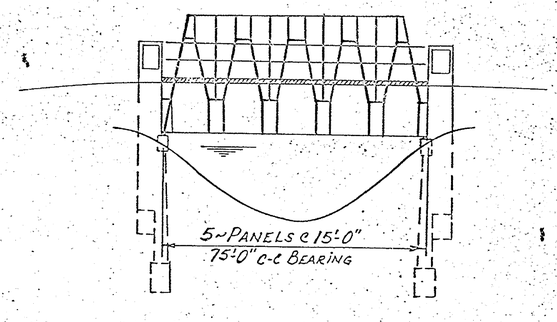
NOTE:
MONUMENT TO BE CONSTRUCTED OF CLASS B CONCRETE WHEN GRADING HAS BEEN COMPLETED AND SLOPES DRESSED, CONCRETE MARKERS SHALL BE SET AT POINTS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

LONGITUDINAL STEEL SHALL BE HELD IN PLACE BY CRADLES.

LETTERS AND CROSS TO BE COUNTERSUNK IN TOP OF MARKER 1/4".

FOR CONSTRUCTION BASELINE OFFSET LOCATIONS (P.C. & P.T.) AT RIGHT OF WAY LINE LEFT AND RIGHT OF ROADWAY.

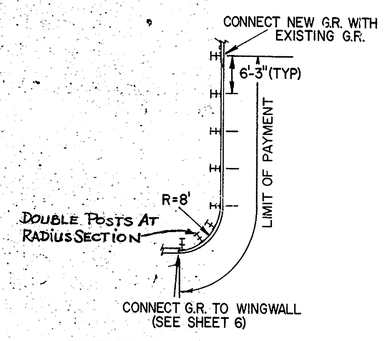
CONCRETE MONUMENT LOCATIONS		
R/W PT. NO.	STATION	OFFSET
17	10099.9813	15.00' Rt.
27	10233.9380	20.00' Rt.
28	10248.1670	20.00' Rt.



ELEVATION

SCALE: 1"=20' Horiz.
1"= 5' Vert.

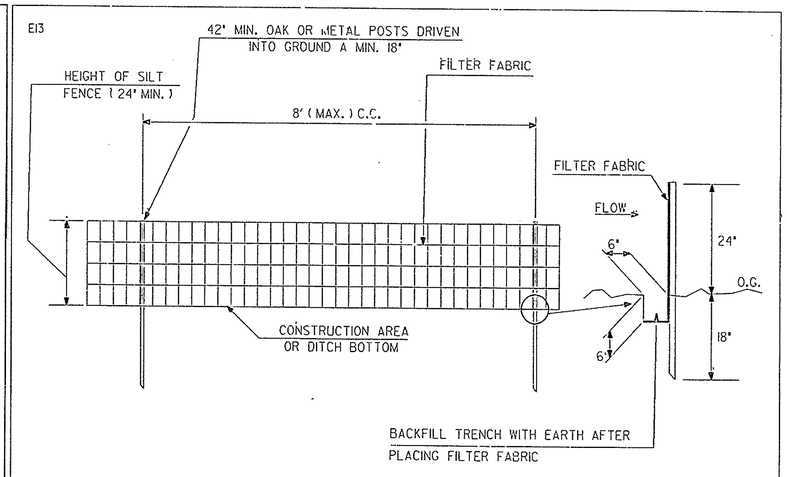
DETAIL OF GUARDRAIL REPLACEMENT



NOTE: RAIL ELEMENTS SHALL BE CONSTRUCTED OF 10 GAUGE STEEL.

DETAIL A-A

N.T.S.



SILT FENCE DETAIL

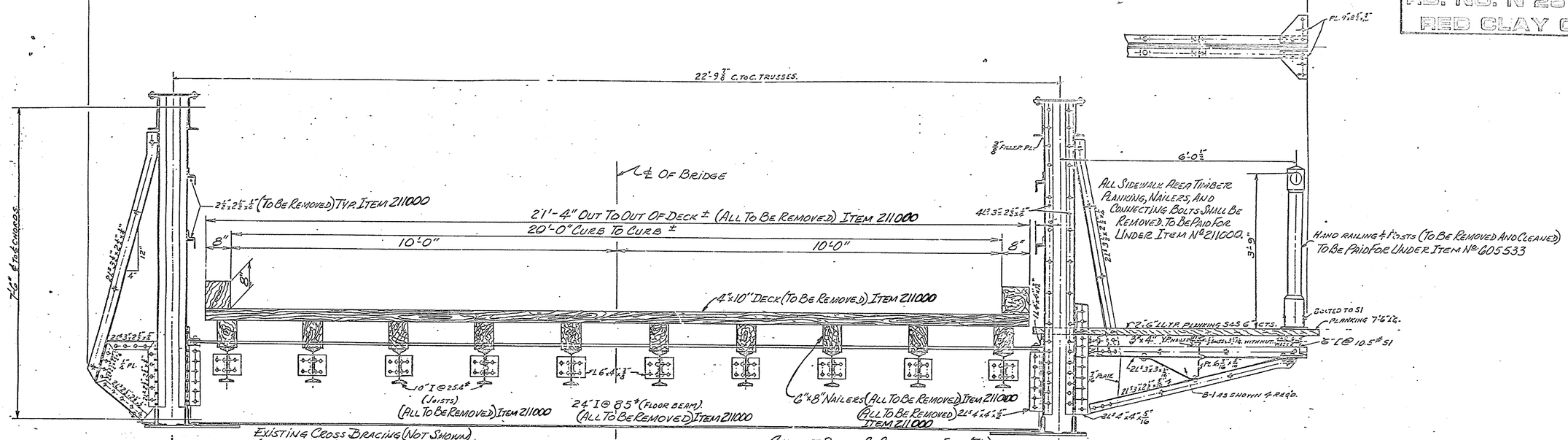
NOT TO SCALE

PREL. TRACING ____ DESIGN T.E.G. ____ CHKD ____

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
39-074-04	N.C.		4	25

BRG. NO. 112 ON
RD. NO. N 257 OVER
RED CLAY CREEK

ALL EXISTING TIMBER, STEEL FLOOR BEAMS, JOISTS, ATTACHED ANGLES, CROSS BRACING, CROSS BRACING GUSSET PLATES AT THE ABUTMENT ENDS, TRUSS GUSSET PLATES, ROCKER BEARINGS AND ANCHOR BOLTS (TO BE CUT FLUSH) SHALL BE REMOVED. TO BE PAID FOR UNDER ITEM Nº 211000. ANY ADDITIONAL DETERIORATED STEEL AS DEEMED NECESSARY BY THE ENGINEER IN THE FIELD SHALL BE REMOVED AND REPLACED. ALL COSTS SHALL BE INCIDENTAL TO ITEM Nº 605001.

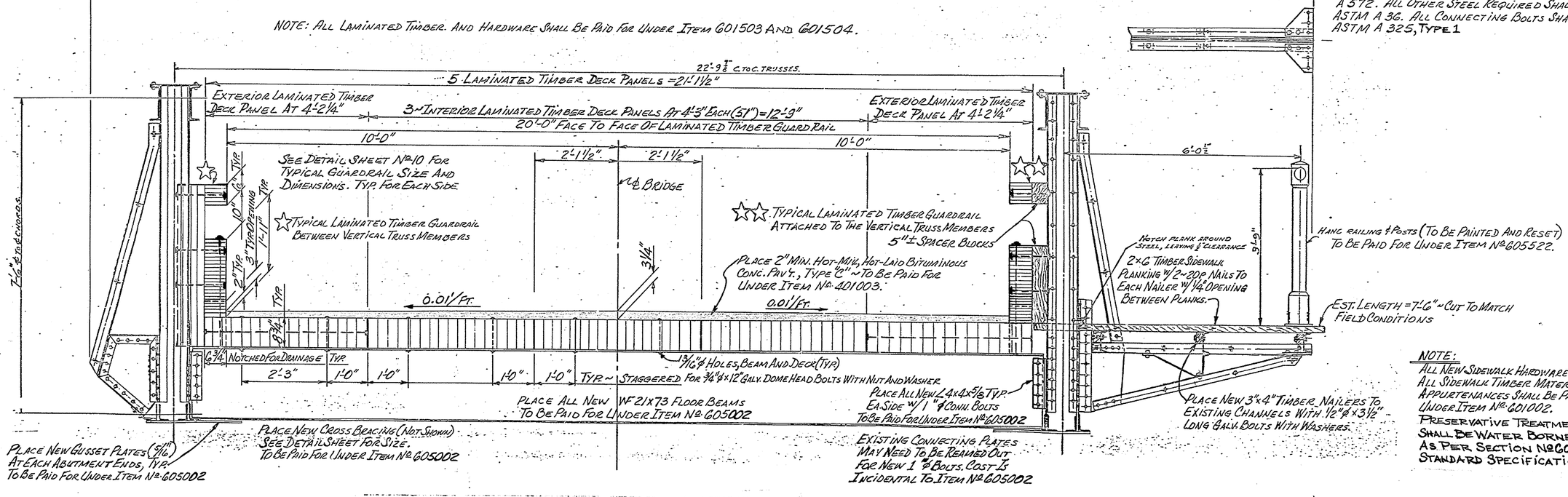


EXISTING TYPICAL SECTION

THE REMAINING EXISTING STEEL SHALL BE CLEANED AND PAINTED. TO BE PAID FOR UNDER ITEM Nºs. 605522 AND 605533. THE NEW STEEL REPLACEMENT SECTIONS SHALL MATCH IN SIZE AND SHAPE AS THAT OF THE REMOVED PIECES, EXCEPT AS NOTED. ALL RIVITS THAT ARE LOOSENED OR HEADS REMOVED DURING CLEANING SHALL BE REPLACED WITH 3/4"ø ASTM A325 BOLTS, WASHERS AND NUTS. ALL OF THE NEW REPLACEMENT STEEL AND FASTENERS SHALL BE PAID FOR UNDER ITEM Nº 605002. ALL NEW REPLACEMENT PIECES SHALL BE CLEANED THOROUGHLY BEFORE PAINTING. THE NEW FLOOR BEAMS, ANGLES, GUSSET PLATES, CROSS BRACING, AND OTHER PORTIONS THAT ARE REPLACED SHALL BE PAINTED ALONG WITH THE EXISTING STEEL STRUCTURE.

NOTE: ALL LAMINATED TIMBER AND HARDWARE SHALL BE PAID FOR UNDER ITEM 601503 AND 601504.

NOTE:
ALL NEW STEEL FLOOR BEAMS SHALL CONFORM TO ASTM A 572. ALL OTHER STEEL REQUIRED SHALL CONFORM TO ASTM A 36. ALL CONNECTING BOLTS SHALL CONFORM TO ASTM A 325, TYPE 1



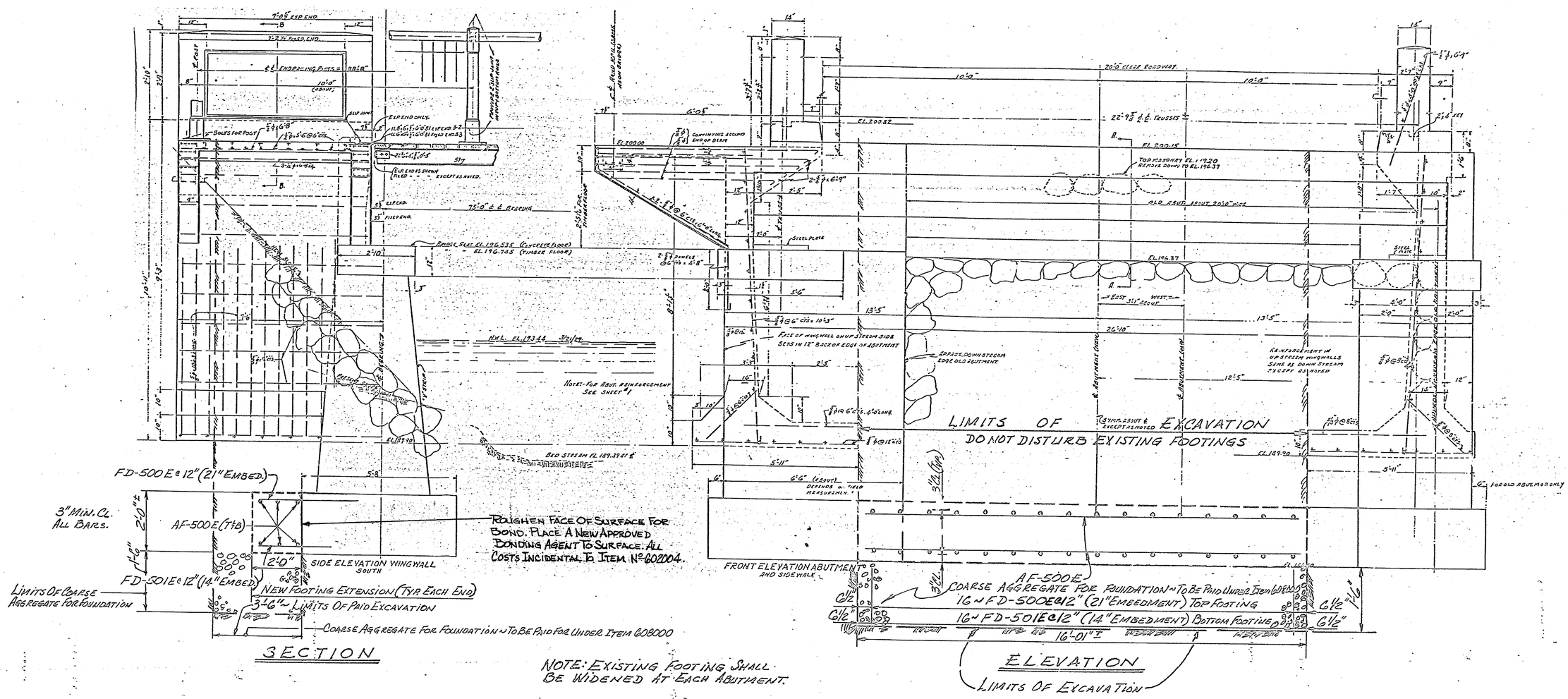
EXISTING TYPICAL SECTION (WORK TO BE PERFORMED)

NOTE:
ALL NEW SIDEWALK HARDWARE SHALL BE USED. ALL SIDEWALK TIMBER MATERIAL AND APPURTENANCES SHALL BE PAID FOR UNDER ITEM Nº 601002. PRESERVATIVE TREATMENT OF TIMBER SHALL BE WATER BORNE PRESERVATIVE AS PER SECTION Nº 601.03 OF THE STANDARD SPECIFICATIONS.

PRELIM. TRACING ____ DESIGN ____ CHKD. ____

CONTRACT	COUNTY	FEDERAL AID PROJECT No	SHEET No	TOTAL SHEETS
89-074-04	N.C.		5	25

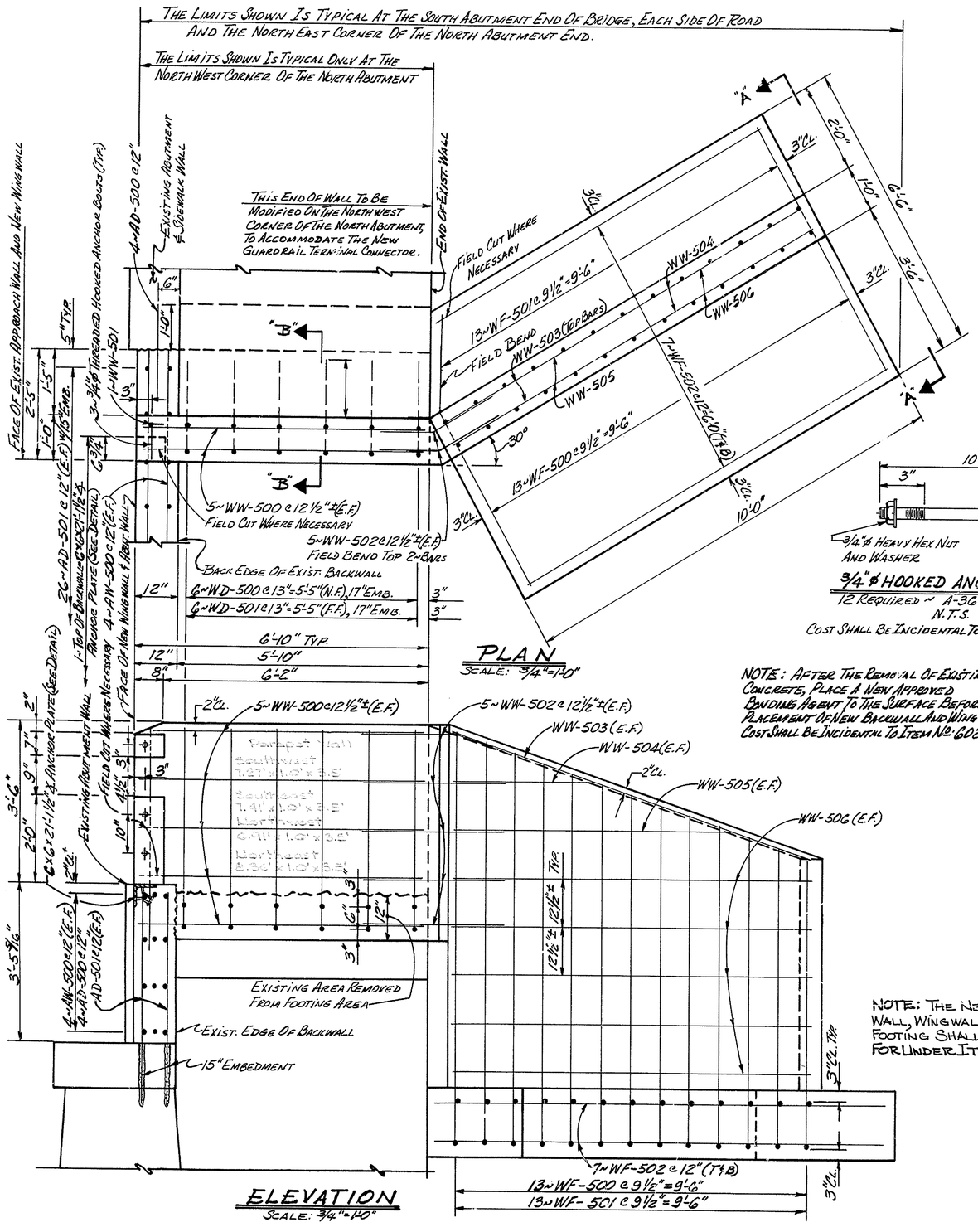
BRG. NO. 112 ON
RD. NO. N 257 OVER
RED CLAY CREEK



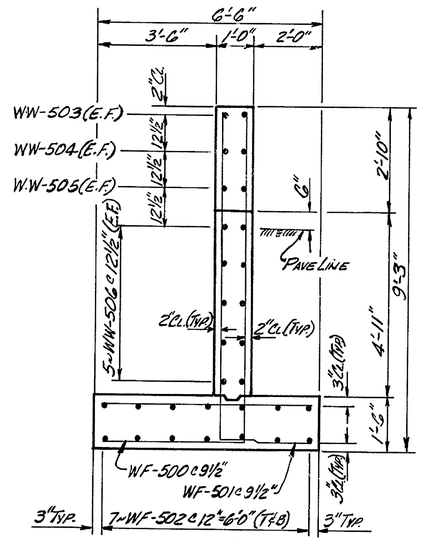
PREL. TRACING
DESIGN
CHKD.

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
89-074-04	N.C.		6	25

BRG. NO. 112 ON RD. NO. N 257 OVER RED CLAY CREEK

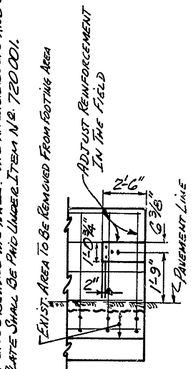


PLAN
SCALE: ¾" = 1'-0"

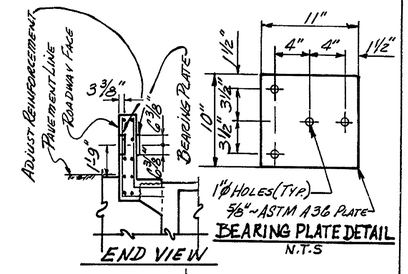


VIEW "A-A"
SCALE: ½" = 1'-0"

NOTE: 4~⅞"ø A-325 ANCHOR BOLTS W/ WASHERS REQUIRED FOR TERMINAL SECTION. INSERTS SHALL BE USED FOR THE BOLTS. BOLTS SHALL BE HEX HEAD, 11-1/8" MIN. LENG. WITH 3" THREADED END. BOLTS SHALL BE PLACED THRU THE WALL. A BEARING PLATE SHALL BE PLACED BEHIND THE WALL. THE ANCHOR BOLTS AND BEARING PLATE SHALL BE PAID UNDER ITEM Nº 720001.

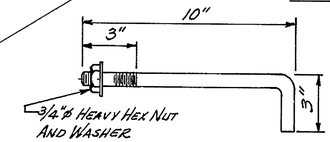


ELEVATION
N.T.S.



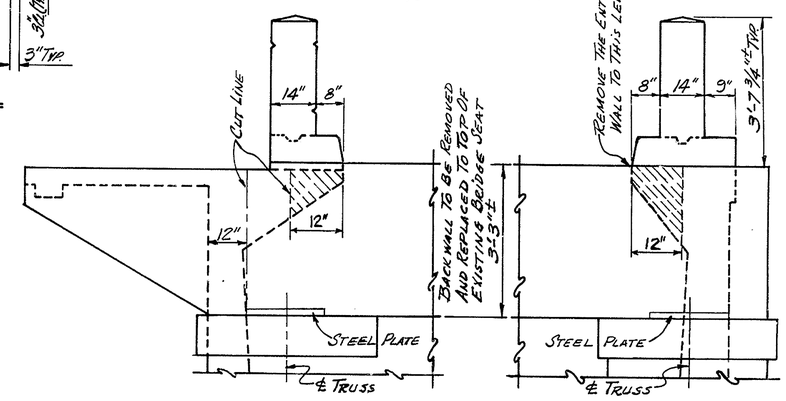
END VIEW
BEARING PLATE DETAIL
N.T.S.

TYPICAL DETAIL FOR MODIFYING NORTHWEST CORNER OF NEW PORTION OF WINGWALL, FOR GUARDRAIL CONNECTION. SEE STANDARD SHEET G-5" FOR TERMINAL CONNECTOR AND SPACING OF HOLES FOR ⅞"ø ANCHOR BOLTS.



¾"ø HOOKED ANCHOR BOLT
12 REQUIRED ~ A-36 STEEL
N.T.S.
COST SHALL BE INCIDENTAL TO ITEM Nº 601503

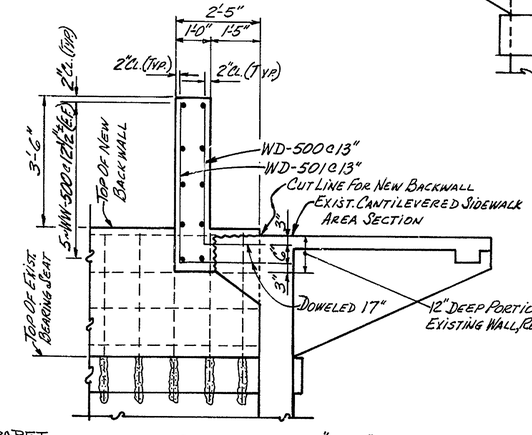
NOTE: AFTER THE REMOVAL OF EXISTING CONCRETE, PLACE A NEW APPROVED BONDING AGENT TO THE SURFACE BEFORE PLACEMENT OF NEW BACKWALL AND WINGWALLS. COST SHALL BE INCIDENTAL TO ITEM Nº 602015.



EXISTING FRONT ELEVATION OF ABUTMENT AND SIDEWALK ~ TYP.
N.T.S.

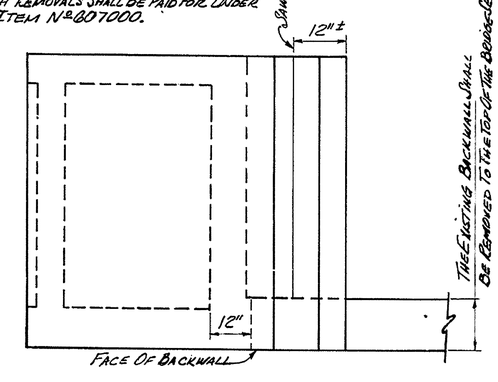
ELEVATION
SCALE: ¾" = 1'-0"

NOTE: THE NEW PARAPET WALL, WINGWALL AND FOOTING SHALL BE PAID FOR UNDER ITEM 602015.



SECTION "B-B"
SCALE: ½" = 1'-0"

▭ DENOTES AREA TO BE REMOVED.
▨ DENOTES PARAPET AREA TO BE REMOVED.
BOTH REMOVALS SHALL BE PAID FOR UNDER ITEM Nº 807000.



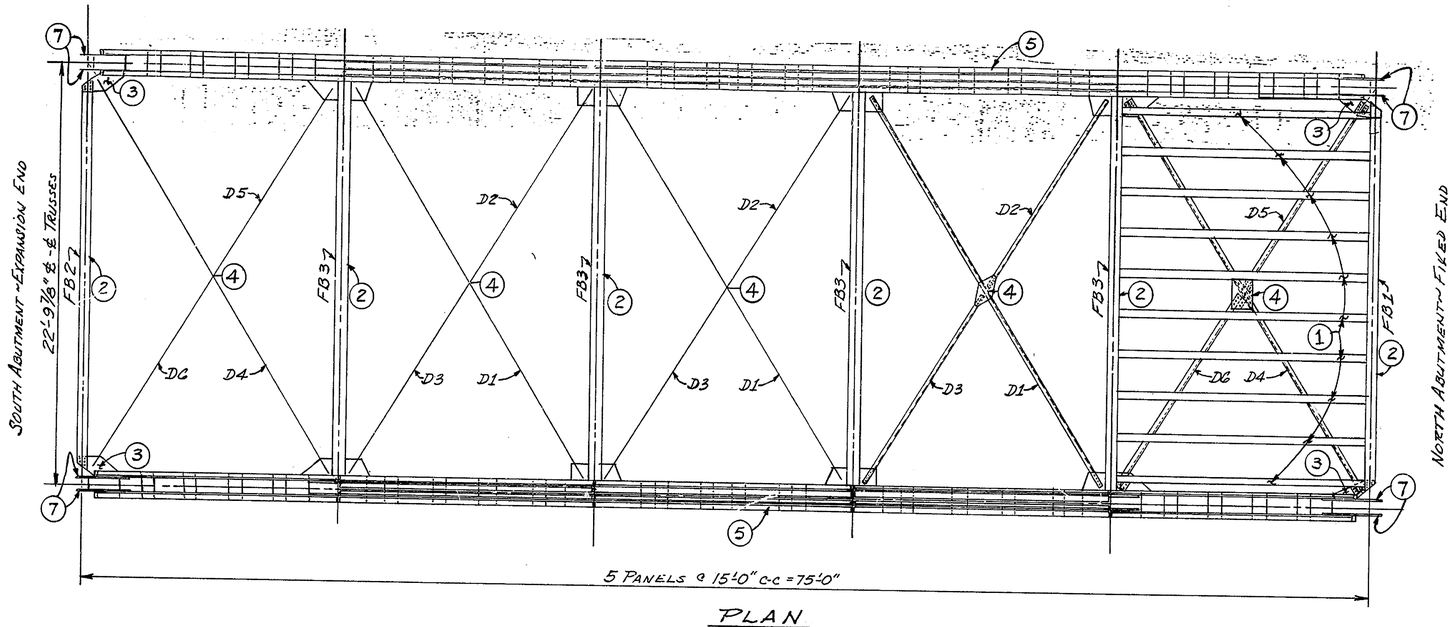
EXISTING PLAN ~ SIDEWALK SIDE ~ TYP.
N.T.S.

NOTE: SEE SHEET Nº 11 FOR BAR REINFORCEMENT LIST. SEE SHEET Nº 9 FOR FORM LINER DETAILS. ALL REINFORCING BARS SHALL BE EPOXY COATED. ANY ADDITIONAL REMOVAL OF MASONRY THAT IS NEEDED OVER THE LIMITS THAT ARE SHOWN ON THE PLANS, SHALL BE PAID FOR UNDER ITEM 807000.

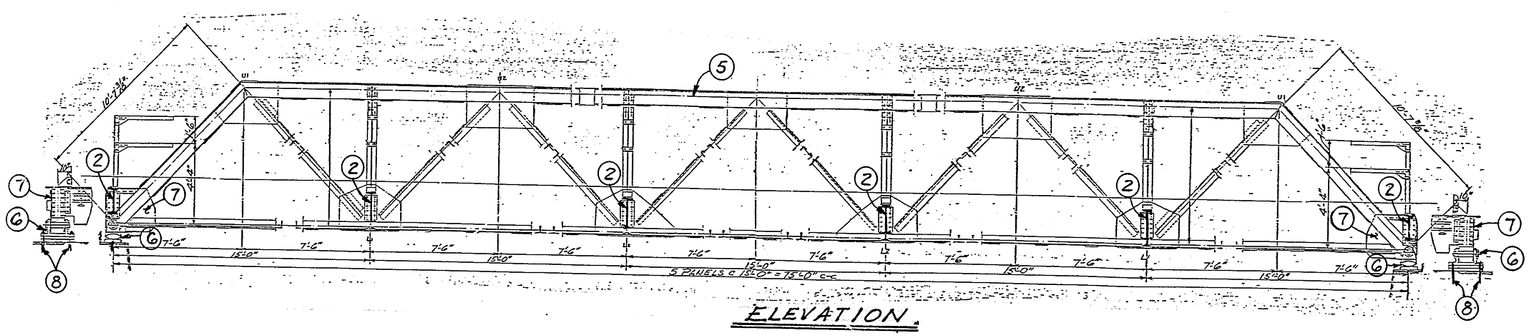
PRELI TRACING | DESIGN | CHKD

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
83-074-04	N.C.		7	25

BRG. NO. 112 ON
RD. NO. N 257 OVER
RED CLAY CREEK



PLAN



ELEVATION.

LEGEND:

1. ALL EXISTING STRINGERS (ALL SPANS) SHALL BE REMOVED AND NOT REPLACED.
2. ALL EXISTING FLOOR BEAMS AND CONNECTING ANGLES SHALL BE REMOVED AND REPLACED WITH NEW W21×73 FLOOR BEAMS AND CONNECTING ANGLES MARKED "FB1 THRU FB3"
3. GUSSET PLATES AT THE ABUTMENT ENDS SHALL BE REMOVED AND REPLACED WITH NEW PLATES.
4. THE EXISTING CROSS BRACING (DIAGONALS) SHALL BE REMOVED AND REPLACED WITH NEW DIAGONALS MARKED "D1 THRU D6".
5. THE EXISTING TRUSS SHALL REMAIN IN PLACE.
6. THE EXISTING ROCKER BEARINGS SHALL BE REMOVED AND REPLACED WITH NEW ROCKER BEARINGS WITH STAINLESS STEEL PINS.
7. THE EXISTING TRUSS GUSSET PLATES SHALL BE REMOVED AND REPLACED WITH NEW PLATES. (8 TOTAL)
8. THE EXISTING BEARING ANCHOR BOLTS SHALL BE CUT FLUSH WITH THE TOP OF THE EXISTING ABUTMENT AND NEW 1 1/4"Ø SWEDGE ANCHOR BOLTS SHALL BE INSTALLED. TYPICAL ALL BOLTS.

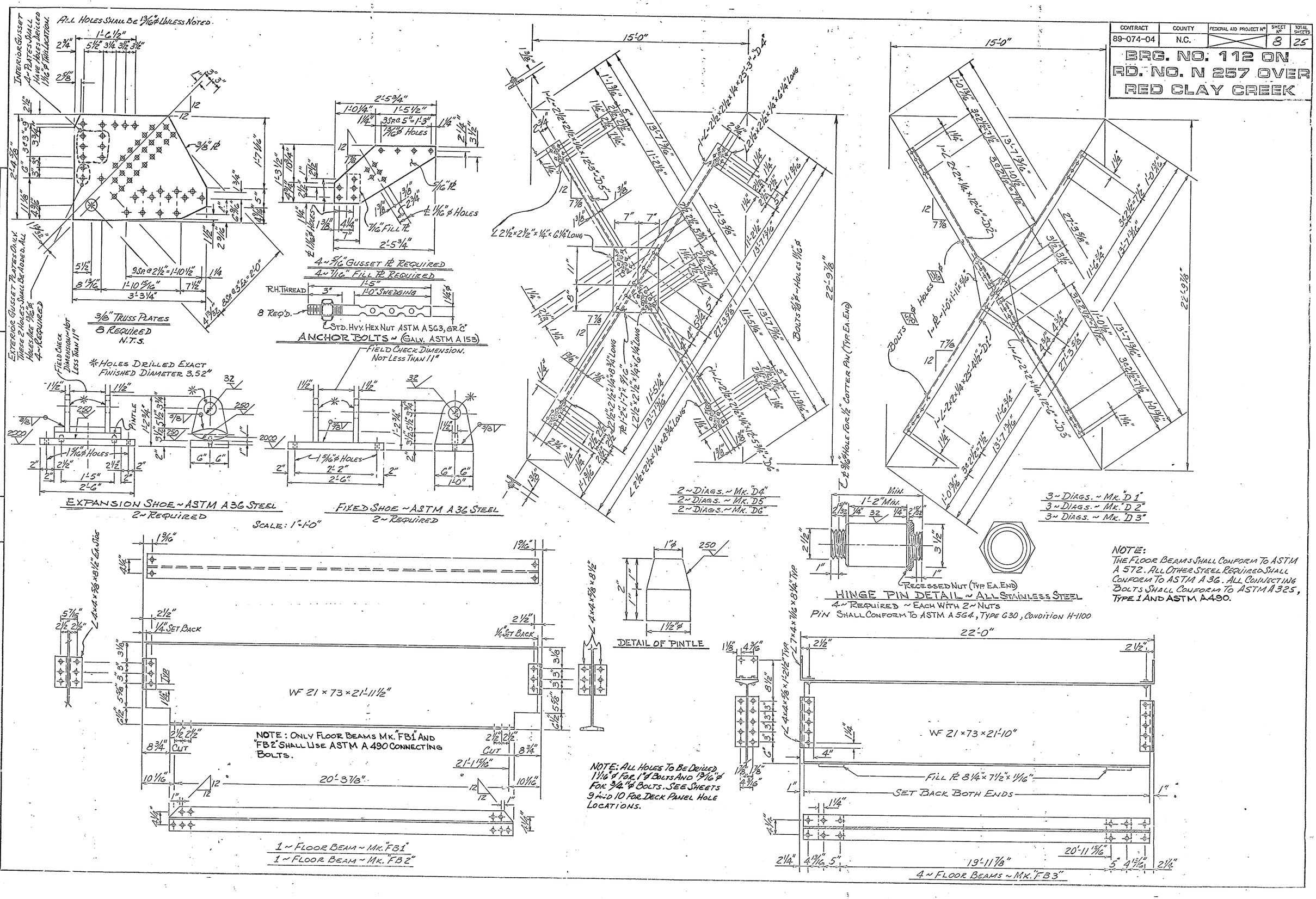
NOTE:

AFTER ALL NECESSARY REMOVALS, THE EXISTING BRIDGE STEEL SHALL BE CLEANED. TO BE PAID FOR UNDER ITEM Nº 605538.
ALL NEW AND EXISTING STEEL, ON THE EXISTING BRIDGE SHALL BE PAINTED. TO BE PAID FOR UNDER ITEM Nº 605522.
ALL THE ABOVE ITEMS 1 THRU 8 SHALL BE PAID FOR UNDER ITEM Nº'S 211000 AND 605002.
ANY ADDITIONAL DETERIORATED STEEL AS DEEMED NECESSARY BY THE ENGINEER IN THE FIELD, SHALL BE REMOVED AND REPLACED. ALL COSTS SHALL BE INCIDENTAL TO ITEM Nº 605001.
ALL EXISTING RIVITS THAT ARE REMOVED, DUE TO THE REMOVAL OF ALL EXISTING STEEL LISTED ABOVE IN THE LEGEND, SHALL BE PAID FOR UNDER ITEM Nº 211000. THE NEW BOLTS USED TO INCORPORATE THE NEW STEEL WITH THE EXISTING, AS SHOWN ON SHEET Nº 8, SHALL BE PAID FOR UNDER ITEM Nº 605002. ALL OTHER RIVITS THAT ARE REMOVED DUE TO CLEANING THE EXISTING STEEL, OR AS DEEMED NECESSARY BY THE FIELD ENGINEER SHALL BE PAID FOR UNDER ITEM Nº 605578.

CHKD.
DESIGN
FIELD TRACING

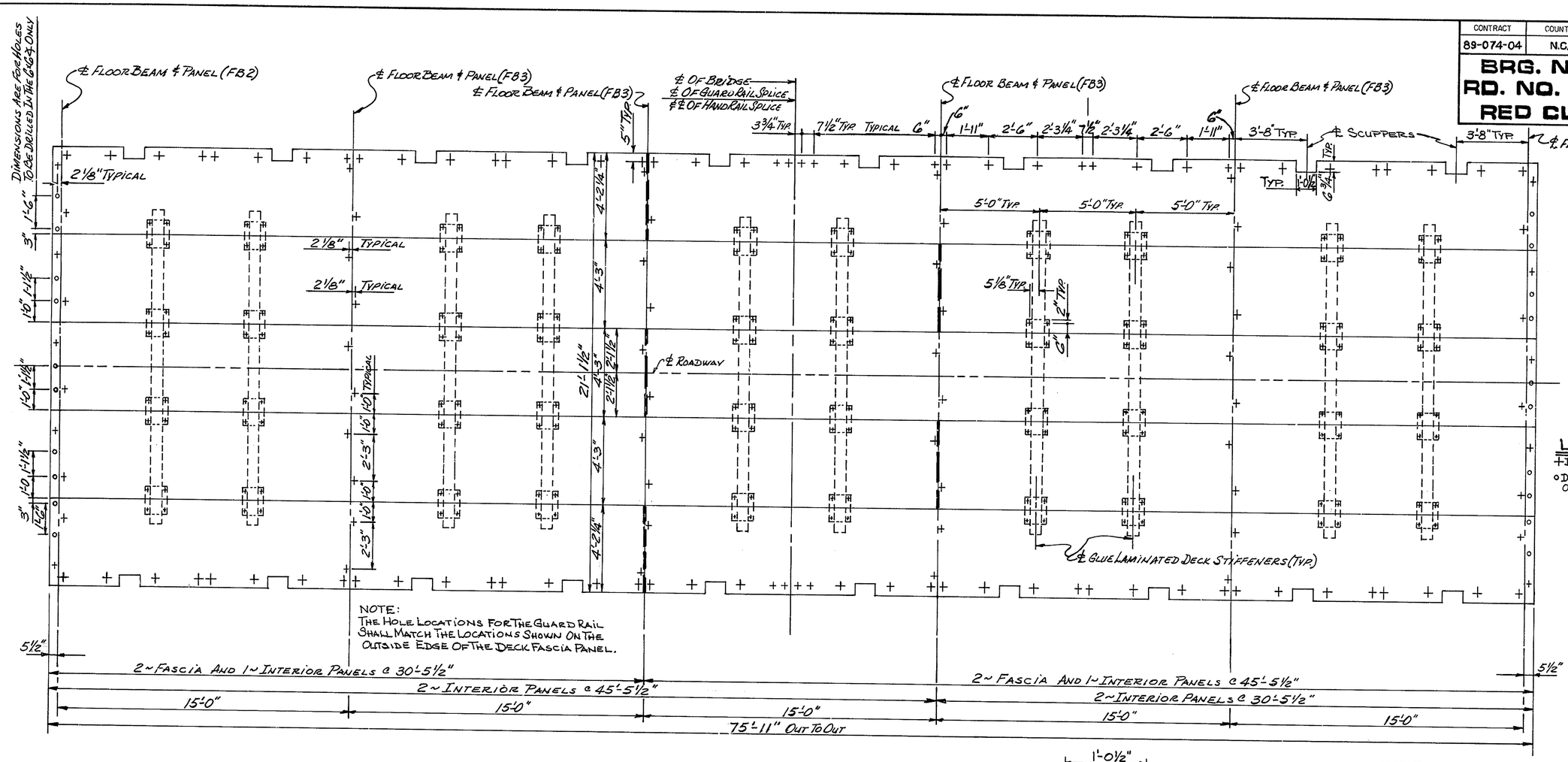
CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
89-074-04	N.C.		8	25

BRG. NO. 112 ON RD. NO. N 257 OVER RED CLAY CREEK



CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
89-074-04	N.C.		9	25

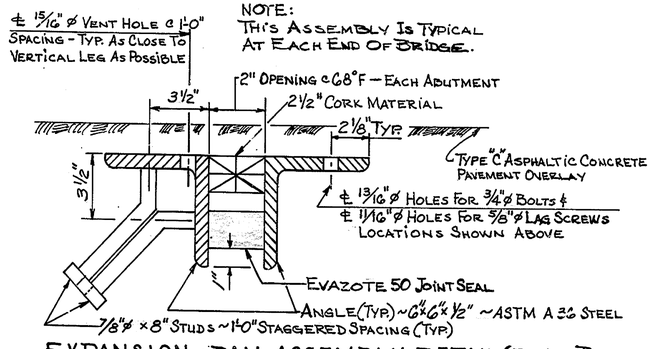
BRG. NO. 112 ON RD. NO. N 257 OVER RED CLAY CREEK



NOTE:
THE HOLE LOCATIONS FOR THE GUARD RAIL SHALL MATCH THE LOCATIONS SHOWN ON THE OUTSIDE EDGE OF THE DECK FASCIA PANEL.

LEGEND

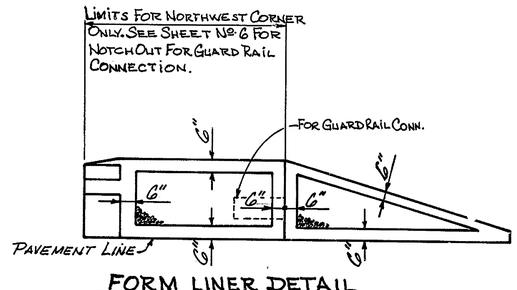
+ DENOTES 13/16"ø HOLE LOCATION
o DENOTES 11/16"ø HOLE LOCATION, ONLY IN EXPANSION DAM ASSEMBLY.



NOTE:
THIS ASSEMBLY IS TYPICAL AT EACH END OF BRIDGE.

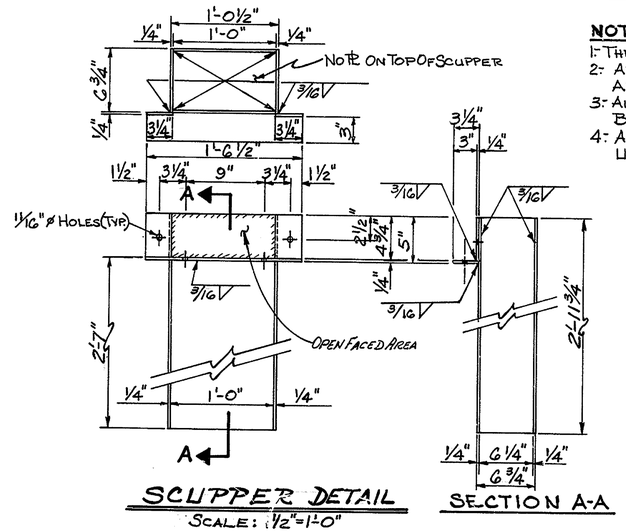
EXPANSION DAM ASSEMBLY DETAIL (FUSION BONDED EPOXY COATED)

ALL MATERIAL SHOWN ABOVE SHALL BE INCIDENTAL TO ITEM Nº 605002
N.T.S.



FORM LINER DETAIL

TYPICAL AT ALL WINGWALLS ~ EACH SIDE OF WALL
ALL COST SHALL BE INCIDENTAL TO ITEM 602015
N.T.S.



SCUPPER DETAIL

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

SECTION A-A

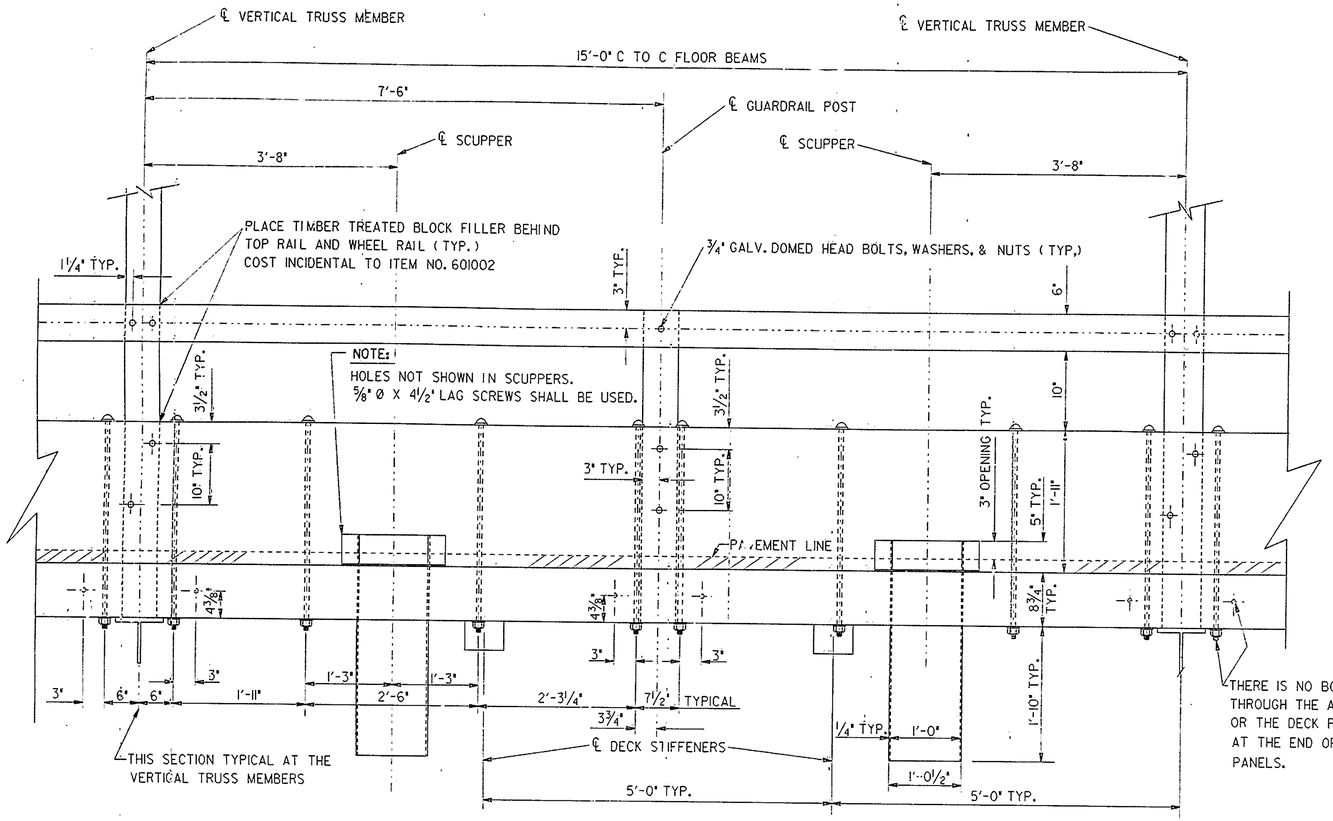
NOTE:
1. THERE ARE 20 SCUPPERS REQUIRED.
2. ALL STEEL PLATES SHALL CONFORM TO ASTM A36 STEEL.
3. ALL SCUPPERS SHALL BE FUSION BONDED EPOXY COATED.
4. ALL SCUPPERS SHALL BE PAID FOR UNDER ITEM Nº 605002.

REVISIONS

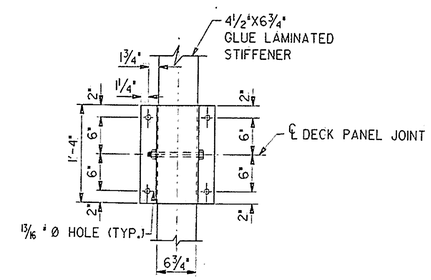
PREL. TRACING | DESIGN | CHKD

BRI-112	CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
	89-074-04	N. C.		10	25

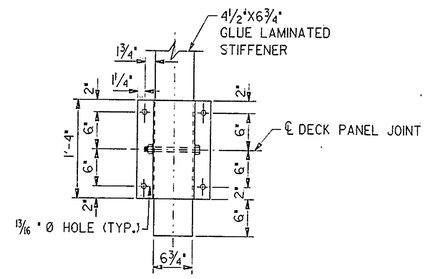
BRG. NO. 112 ON RD. NO. N257 OVER RED CLAY CREEK



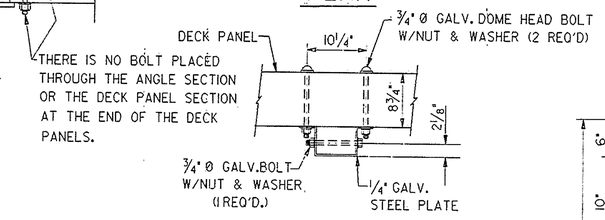
ELEVATION——TYPICAL BETWEEN PANEL MEMBERS



PLAN



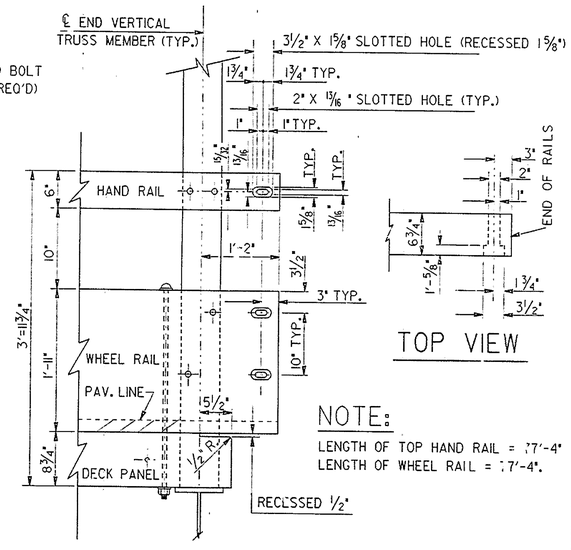
PLAN



ELEVATION

NOTES:

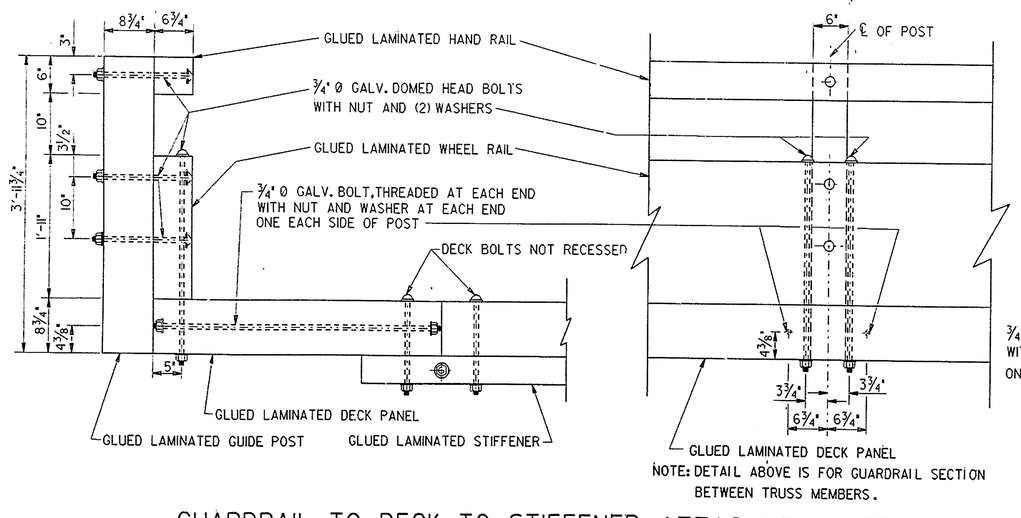
1) ALL HARDWARE SHALL BE GALVANIZED, EXCEPT FOR WASHERS WHICH MAY BE CAST IRON OR MALLEABLE IRON.
2) STEEL PLATES SHALL CONFORM TO ASTM A36 STEEL AND SHALL BE GALVANIZED.
3) ALL HOLES FOR BOLT CONNECTIONS TO THE RAIL POSTS SHALL BE RECESSED.
4) SEE SHEET NO. 9 ,PLAN DETAIL, FOR SCUPPERS, WHEEL RAIL SPLICE, HAND RAIL SPLICE, AND STIFFENER LOCATIONS.
5) THE CONTRACTOR SHALL NOTIFY HIS SUPPLIERS WEITHER TO DRILL THE HOLES IN THE SHOP OR TO FIELD DRILL HIMSELF.
6) ALL HOLES FOR ¾" Ø BOLTS SHALL BE 13/16" Ø.
7) THE GLUED LAMINATED DECK PANEL SHALL BE PAID FOR UNDER ITEM NO. 601503. THE GLUED LAMINATED WHEEL RAIL, THE TOP HAND RAIL, AND STIFFENERS SHALL BE PAID FOR UNDER ITEM NO. 601504.



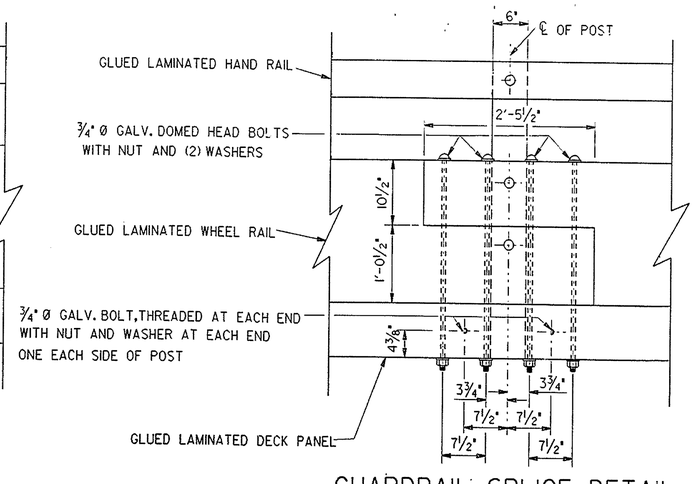
TOP VIEW

NOTE:
LENGTH OF TOP HAND RAIL = 77'-4"
LENGTH OF WHEEL RAIL = 77'-4".

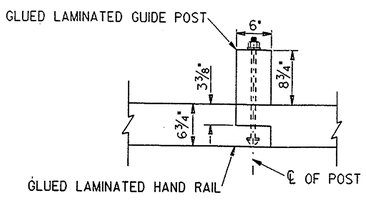
TYPICAL END SECTION



GUARDRAIL TO DECK TO STIFFENER ATTACHMENT DETAIL



GUARDRAIL SPLICE DETAIL



HAND RAIL SPLICE DETAIL

PRELIMINARY TRACING PF DESIGN TEG CHECKED MAA

(1) MARK NUMBER WITH SUFFIX 'E' DENOTES EPOXY COATED REINFORCING STEEL.

(2) MARK 'LOCATION PREFIXES' ARE AS FOLLOWS: (X)A = ABUTMENT, (X)AS = APPROACH SLAB, (X)F = FOOTING, (X)H = HEADWALL, (X)M = MISC. BARS, (X)PA = PARAPET, (X)P = PIER, (X)S = SLAB, (X)T = TOEWALL, (X)W = WINGWALL - WHERE (X) DENOTES SPECIFIC LOCATION (IF APPLICABLE).

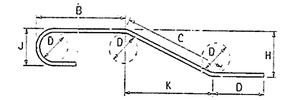
BR. 1-112.

SPECIFICATIONS					BENDING DIMENSIONS										
QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F/R	G	H	J	K	O
39	5	6-000	WF503E	STR		6-000									
39	5	10-010	WF500E	17		4-010	6-000	0-000							
		TO					TO								
		12-110					8-100								
39	5	8-070	WF501E	17		2-070	6-000	0-000							
		TO					TO								
		11-050					8-100								
42	5	9-060	WF502E	STR		9-060									
30	5	9-080	WW506E	STR		9-080									
6	5	7-090	WW505E	STR		7-090									
6	5	4-010	WW504E	STR		4-010									
6	5	10-000	WW503E	STR		10-000									
40	5	6-060	WW500E	STR		6-060									
30	5	5-020	WW502E	16	0-000	0-000	2-070	2-070				1-032		2-023	4-093
24	5	6-060	WD501E	17		0-000	4-030	2-030							
24	5	5-040	WD500E	17		0-000	3-090	1-070							
4	5	4-070	WW501E	STR		4-070									
8	5	2-000	AD500E	STR		2-000									
16	5	25-060	AW500E	STR		25-060									
104	5	4-060	AD501E	STR		4-060									
32	5	4-000	FD500E	STR		4-000									
12	5	15-060	AF500E	STR		15-060									
32	5	2-110	FD501E	STR		2-110									

SPECIFICATIONS					BENDING DIMENSIONS										
QTY.	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F/R	G	H	J	K	O

NOTES:

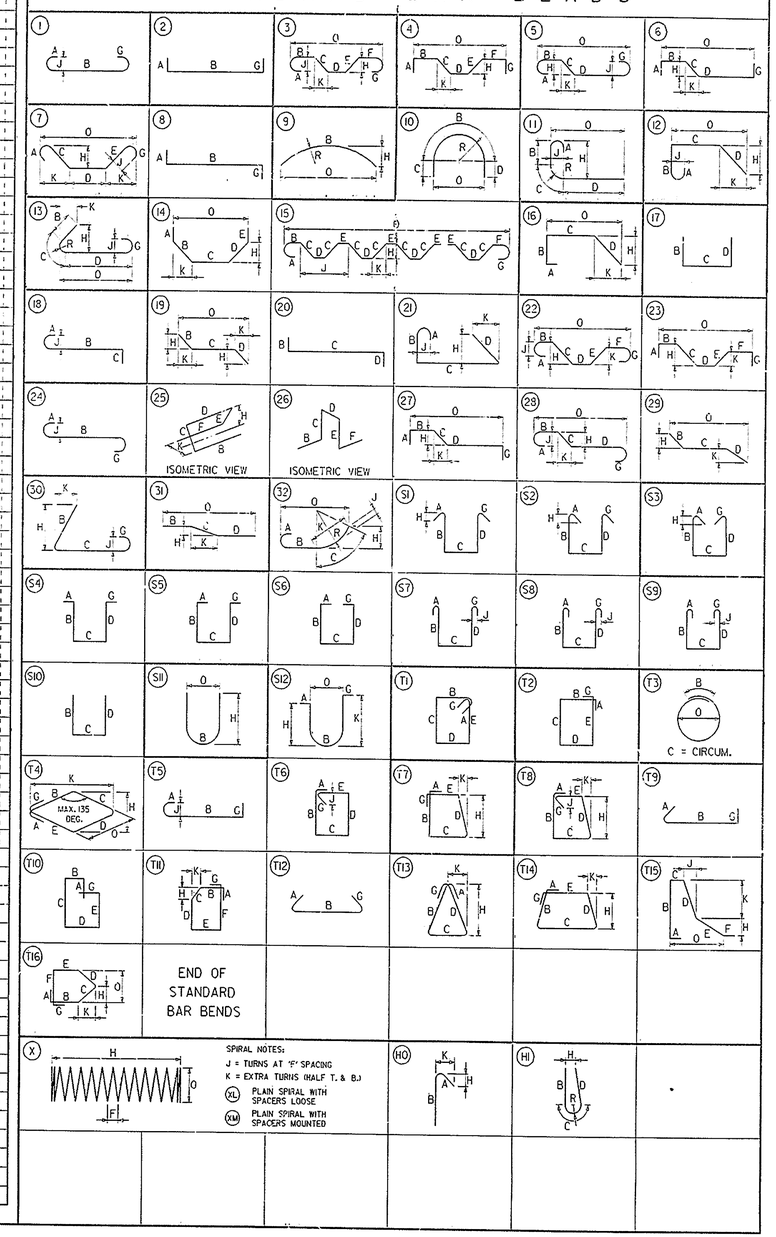
1. STANDARD BAR BENDS INCLUDE ONLY TYPES 1-32, S1-S12, AND T1-T16.
2. ALL DIMENSIONS ARE OUT-TO-OUT OF BAR EXCEPT 'A' AND 'G' ON STANDARD 180° AND 135° HOOKS.
3. 'J' DIMENSIONS ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
4. WHERE 'J' IS NOT SHOWN, 'J' WILL BE KEPT EQUAL TO OR LESS THAN 'H' ON TRUSS BARS. WHERE 'J' CAN EXCEED 'H', IT SHOULD BE SHOWN.
5. 'H' DIMENSIONS STIRRUPS TO BE SHOWN WHERE NECESSARY TO FIT WITHIN CONCRETE.
6. UNLESS OTHERWISE NOTED, DIAMETER 'D' IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.
7. WHERE SLOPE DIFFERS FROM 45° DIMENSIONS, 'H' AND 'K' MUST BE SHOWN.
8. WHERE BARS ARE TO BE BENT MORE ACCURATELY THAN STANDARD BENDING TOLERANCES, BENDING DIMENSIONS WHICH REQUIRE CLOSER FABRICATION SHOULD HAVE LIMITS INDICATED.
9. FIGURES IN CIRCLES SHOW TYPES.
10. FOR RECOMMENDED DIAMETER 'D', OF BENDS, HOOKS, ETC., SEE 'CRSI' OR 'ACI' TABLES.
11. TYPE S1-S12, T1-T16 APPLY TO BAR SIZES #3 THROUGH #6.



CONTRACT	COUNTY	F.A.P. NO.	SHEET NO.	TOTAL SHTS.
89-074-04	N. C.		11	25

REINFORCING BAR LIST

STANDARD BAR BENDS



PREL. TRACING ____ DESIGN ____ CHK. ____

DETOUR PLAN

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº		
89-074-04	N.C.		12	25

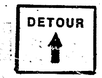
BR. # 112 ON N.C. 257
OVER RED CLAY CREEK

A

M4-10L

B

M4-10R

C 

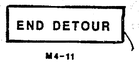
M4-9S

D

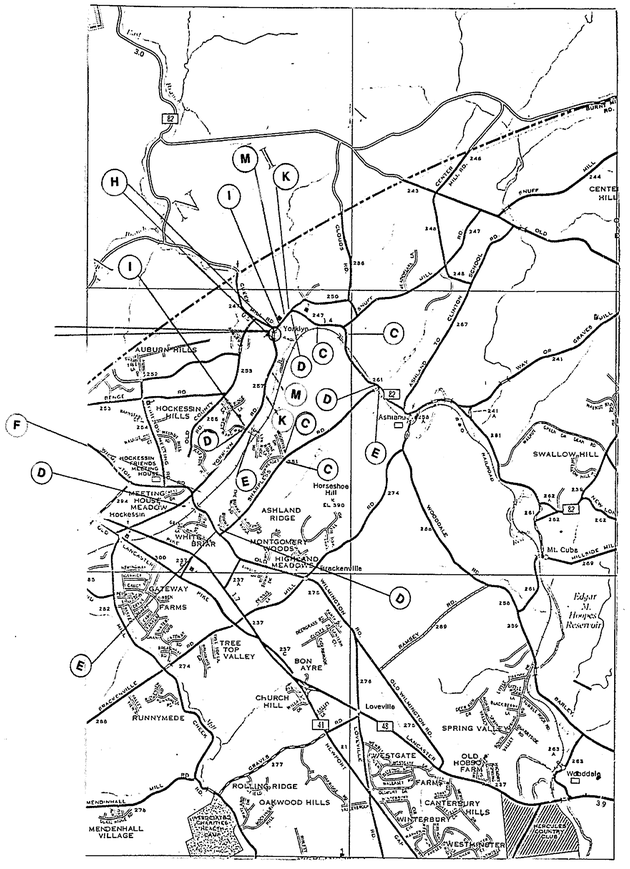
M4-9R

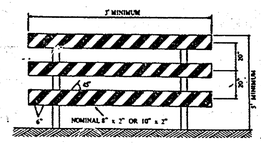
E

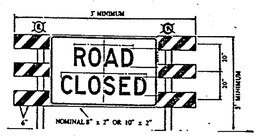
M4-9L

F 

M4-11



G 

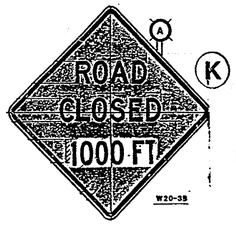
H 

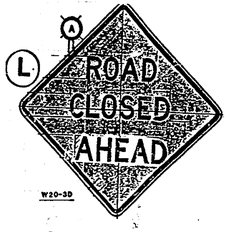
I

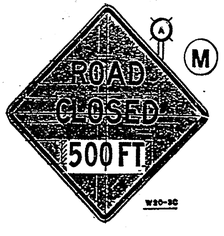
J

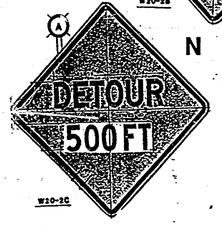
NOTES :

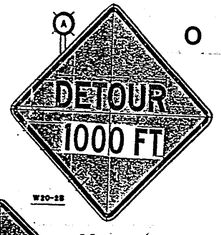
1. SEE PAGE # 91 OF THE " DELAWARE TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENCE OPERATIONS" (REVISED DECEMBER 1987) FOR EXAMPLE OF DETOUR SET UP.
2. SIGNS C,D, E,F, WILL BE INSTALLED AND MAINTAINED BY TRAFFIC FORCES.
3. ALL LIGHTS TYPE "B" HIGH-INTENSITY FLASHING AMBER OR RED.
4. USE OF TYPE II,III, BARRICADES SHALL COMPLY WITH PAGE 44, SETION A & B OF THE MANUAL.

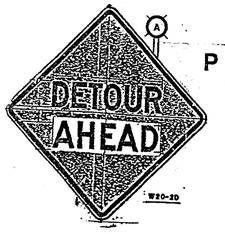
K 

L 

M 

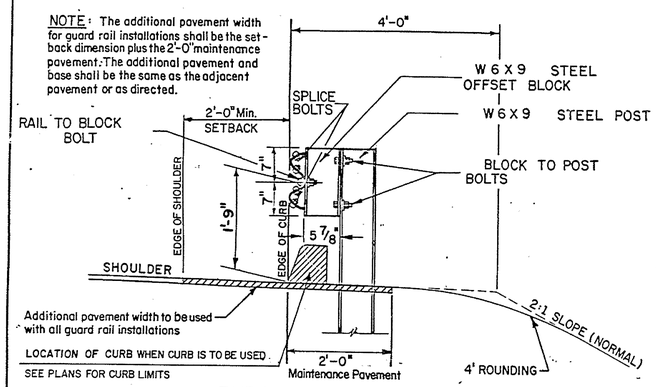
N 

O 

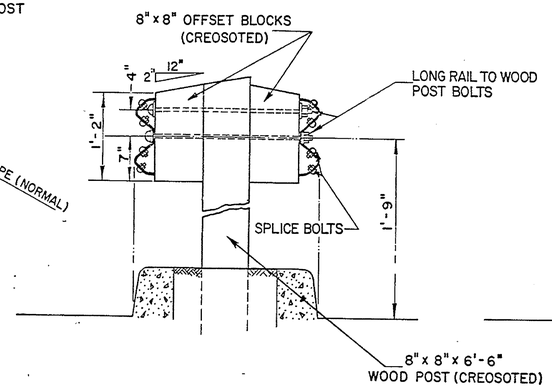
P 

CHKD.
DESIGN
PREL. TRACING

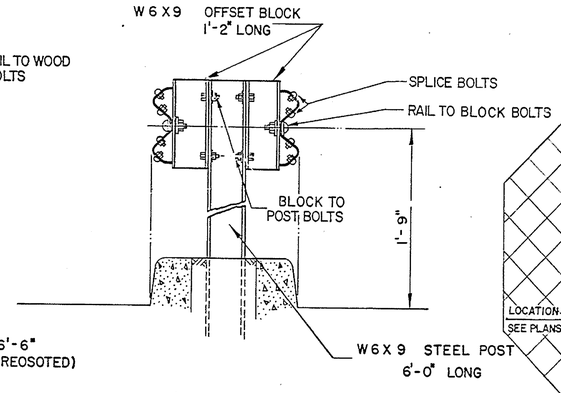
NOTE: The additional pavement width for guard rail installations shall be the set-back dimension plus the 2'-0" maintenance pavement. The additional pavement and base shall be the same as the adjacent pavement or as directed.



RURAL
TYPICAL SECTION AT SHOULDER
Not To Scale



MEDIAN BARRIER
WOOD POST
Not To Scale



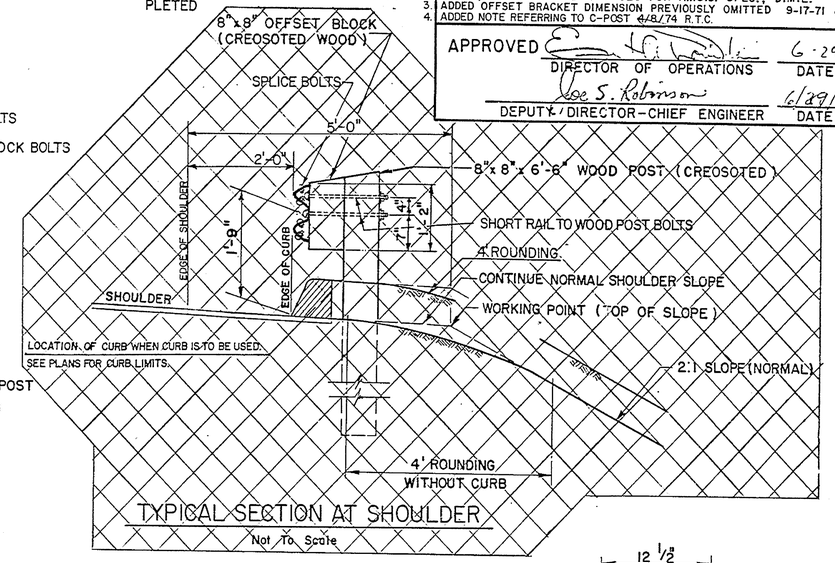
MEDIAN BARRIER
STEEL POST
Not To Scale

ALL WOOD POST DIMENSIONS ARE NOMINAL

NOTE: TRANSITION GUARDRAIL 1 FT. IN 37.5 FT. WHEN PASSING FROM CURBED SECTION TO SECTION WITH NO CURB.

SEE STANDARD SHEET G-4 FOR ALT. 6" C-STRONG POST DETAIL.

THREADS OF ALL BOLTS SHALL BE BURRED AFTER GUARDRAIL INSTALLATION IS COMPLETED



TYPICAL SECTION AT SHOULDER
Not To Scale

COUNTY	CONTRACT	F.B.A. REG. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	89-07A04	2	DEL.		14	25

STANDARD SHEET G-2-9
STEEL BEAM GUARDRAIL WOOD AND STEEL POST DETAILS

PREL. TRACING J. W. DESIGN CHKD. E. L. W.

REVISIONS
1. CORRECTED DIMENSIONS ON SPLICE DETAIL 8-13-70 J.T.B.
2. 4/1/71, NOMENCLATURE CHANGES FOR A.I.S.C. SPEC., D.M.E.
3. ADDED OFFSET BRACKET DIMENSION PREVIOUSLY OMITTED 9-17-71 J.T.B
4. ADDED NOTE REFERRING TO C-POST 6/8/74 R.T.C.

APPROVED
DIRECTOR OF OPERATIONS — DATE 6-29-70
Joe S. Robinson
DEPUTY DIRECTOR-CHIEF ENGINEER — DATE 6/29/70

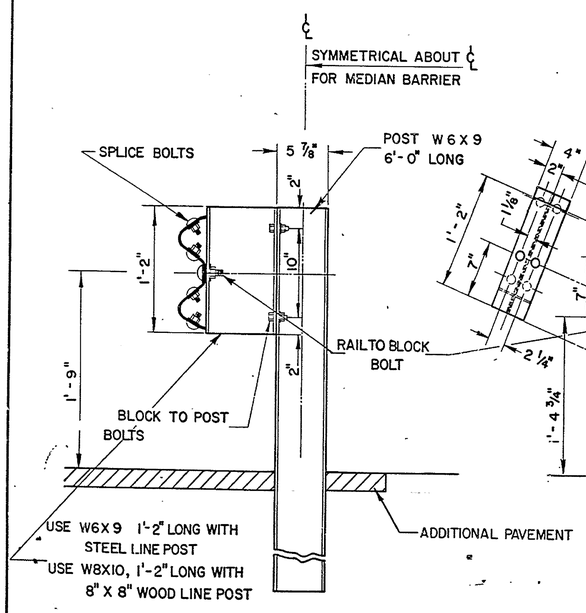
WASHER INSTALLATION NOTES
(See standards sheet G-4 for washer details)

ONE "TYPE A" WASHER SHALL BE USED UNDER –
- The head on button head rail to block bolts
- The head on button head long rail to wood post bolts *
- The nut on button head long rail to wood post bolts *
- The head on button head short rail to wood post bolts *

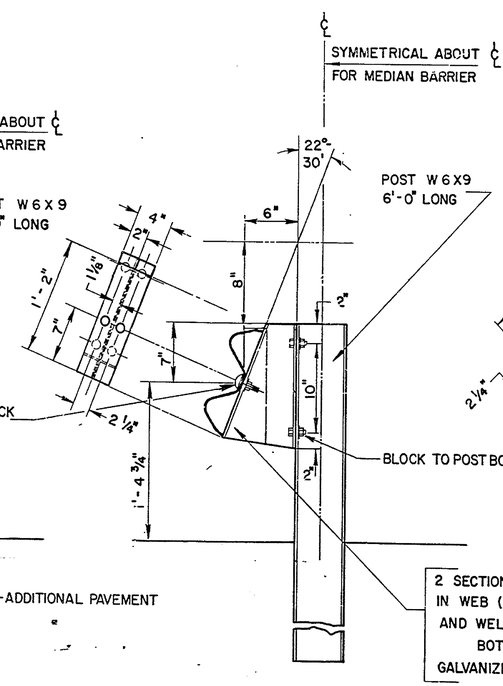
ONE STEEL WASHER SHALL BE USED UNDER –
- The nut on button head rail to block bolts
- The head on block to steel post bolts
- The nut on block to steel post bolts
- The nut on button head long rail to wood post bolts *
- The nut on button head short rail to wood post bolts

STEEL WASHERS SHALL NOT BE USED ON SPLICE BOLTS

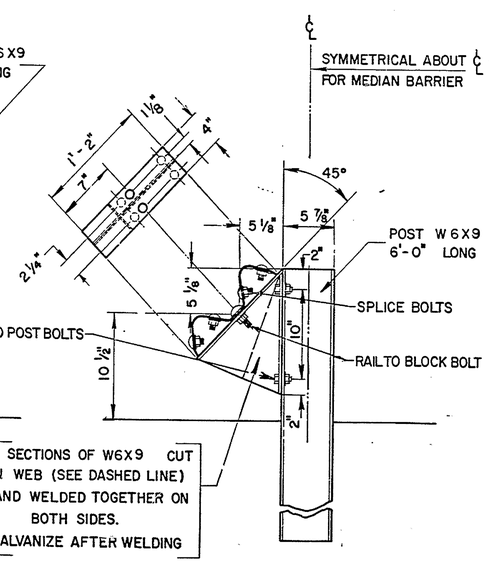
* "Type A" washers to be used on long or short rail to wood post bolts only where they penetrate the guardrail. Steel washers are to be used elsewhere except under the head of button head bolts through wood offset blocks.



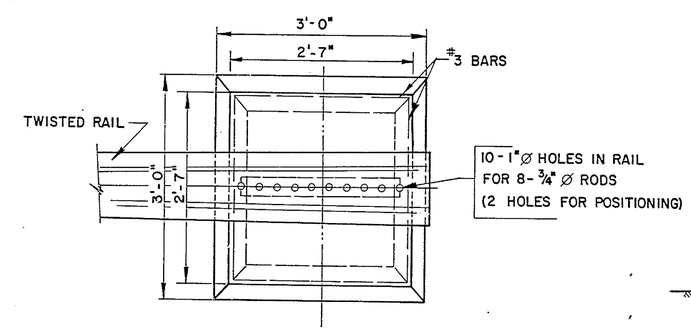
POST "A"
Not To Scale



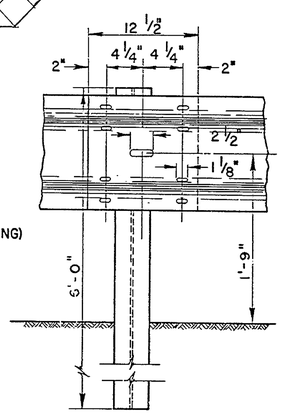
POST "B"
Not To Scale



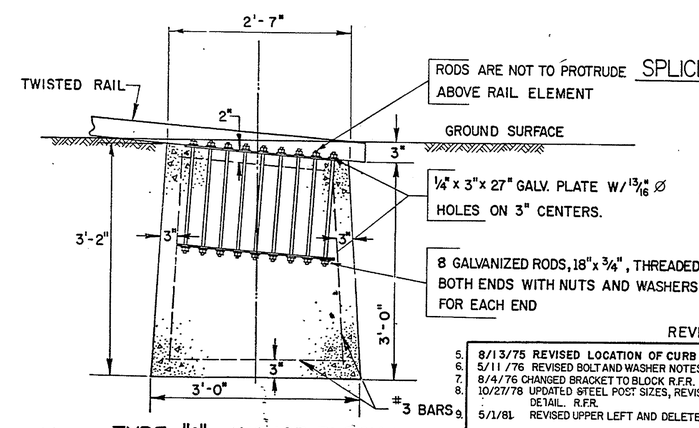
POST "C"
Not To Scale



Top View
(Single Barrier)



SPLICE DETAIL FOR STEEL POST



TYPE "A" ANCHOR BLOCK
SIDE VIEW (Single Rail & Median Barrier)

REVISIONS
5. 8/13/75 REVISED LOCATION OF CURB AND PLACEMENT OF GUARDRAIL RTC
6. 5/11/76 REVISED BOLT AND WASHER NOTES AND SHOULDER TO GUARDRAIL DIMENSION R.F.R.
7. 8/4/76 CHANGED BRACKET TO BLOCK R.F.R.
8. 10/27/78 UPDATED STEEL POST SIZES, REVISED ANCHOR BLOCK DETAIL AND WOOD POST DETAIL. R.F.R.
9. 5/1/81 REVISED UPPER LEFT AND DELETED UPPER RIGHT TYPICAL SECTION R.F.R.

COUNTY	CONTRACT	F.E.A. REG. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	89-074-04	2	DEL.		15	25

STANDARD SHEET G-4-7

POSTS & FASTENERS - GALVANIZED STEEL BEAM GUARDRAIL

STEEL TRACING J.T.B. DESIGN CHKD. E.L.W.

REVISIONS

1. 4/1/71, NOMENCLATURE CHANGES FOR A.I.S.C. SPEC., D.M.E.
2. 10/10/74, ADDED 6"-C STRONG POST AS ALTERNATE FOR W 6x8.5 STEEL POST, R.T.C.
3. 1/30/76 ADDED NOTES CONCERNING GALVANIZING AND USE OF BOLT, R.T.C.
4. 5/11/76 ADDED BURRING NOTE R.F.R.
5. 8/4/76 NOMENCLATURE CHANGES AND SHORT WOOD POST BOLT LENGTH REVISED R.F.R.
6. 10/27/78 WOOD AND STEEL POSTS REVISED-STEEL POST SIZES UPDATED R.F.R.
7. 5/15/84 ADDED REFLECTORIZED WASHER DETAIL B.E.B.

APPROVED 8-17-70
DIRECTOR OF HIGHWAYS DATE

8/19/
DEPUTY DIRECTOR - CHIEF ENGINEER DATE

FASTENERS INCLUDE BOLTS, NUTS, AND WASHERS. SOME OF THE NUT AND BOLT DRAWINGS INCLUDE A WASHER DETAIL; OTHERS DO NOT. THE SIGNIFICANCE OF THIS IS THAT A PARTICULAR WASHER MAY BE USED WITH MORE THAN ONE BOLT OR THAT A PARTICULAR BOLT MAY BE USED WITH MORE THAN ONE WASHER AND, TO AVOID EXCLUSIONS AND EXPLANATORY NOTES ON THE DRAWINGS, THE PARTS HAVE BEEN SEGREGATED.

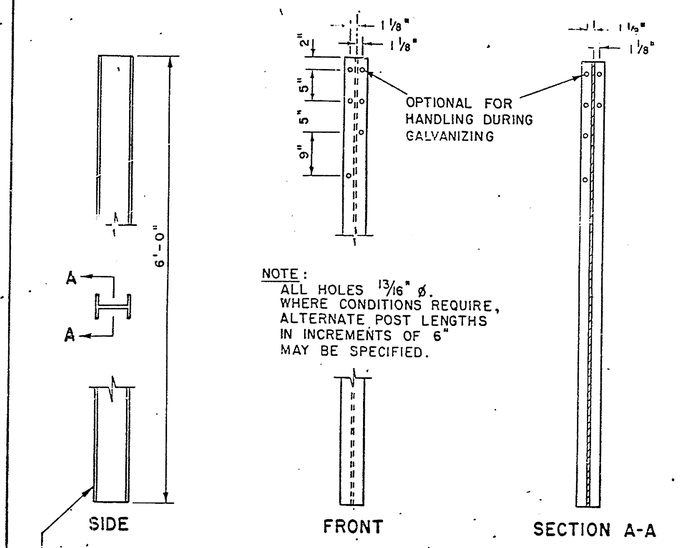
STEEL AND WOOD POSTS AND OFFSET BLOCKS ARE SHOWN FOR "W" BEAM GUARDRAIL AND "W" BEAM MEDIAN BARRIER SYSTEMS ONLY.

ALTERNATE 6"C-STRONG POST MAY BE USED IN PLACE OF W6x9 STEEL POST IN ACCORDANCE WITH F.H.W.A. N 5040.2 APRIL 30, 1974.
SEE DETAIL THIS SHEET 6"C-STRONG POST.

THE THREADS OF ALL BOLTS SHALL BE BURRED AFTER INSTALLATION OF THE GUARDRAIL HAS BEEN COMPLETED.

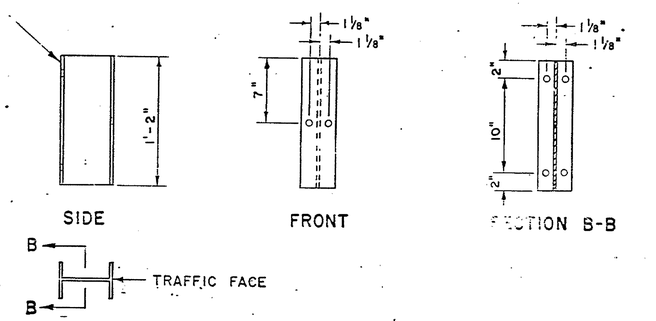
NO PUNCHING, DRILLING OR CUTTING OF GALVANIZED STEEL BEAM GUARDRAIL POST OR BLOCKS WILL BE PERMITTED AFTER GALVANIZING.

ALL WOOD POST DIMENSIONS ARE NOMINAL

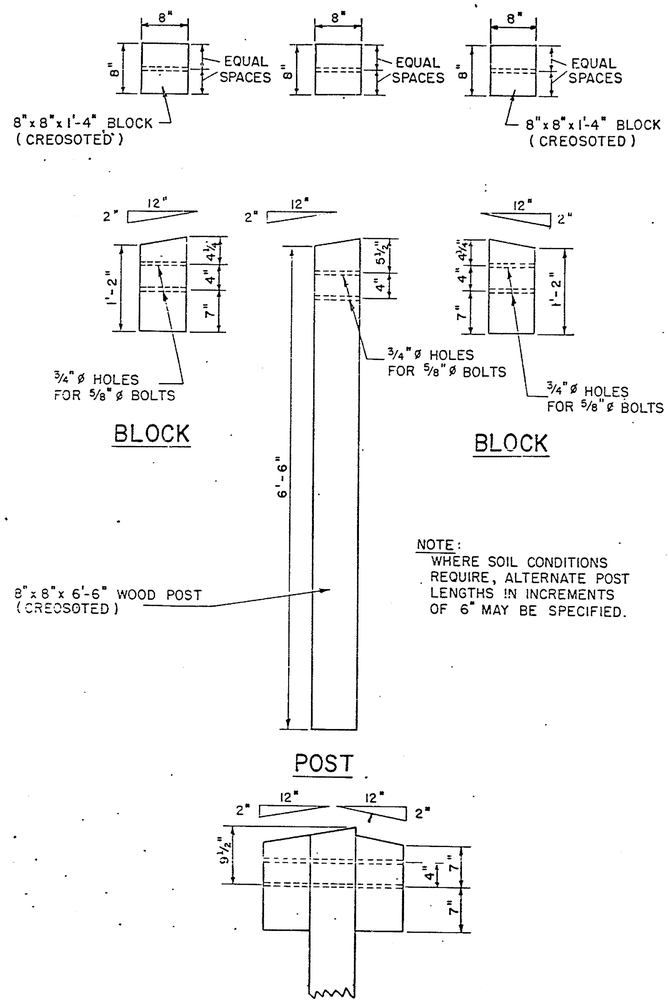


NOTE: ALL HOLES 13/16" ø. WHERE CONDITIONS REQUIRE, ALTERNATE POST LENGTHS IN INCREMENTS OF 6" MAY BE SPECIFIED.

W6X9 GALVANIZED STEEL BEAM GUARDRAIL POST

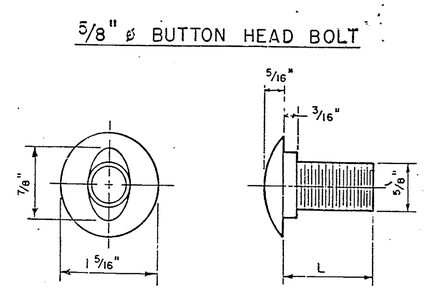


W6X9 GALVANIZED STEEL BEAM GUARDRAIL BLOCK

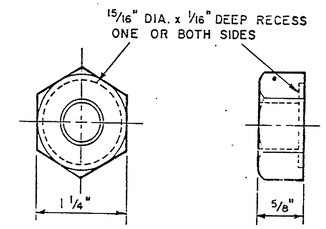


NOTE: WHERE SOIL CONDITIONS REQUIRE, ALTERNATE POST LENGTHS IN INCREMENTS OF 6" MAY BE SPECIFIED.

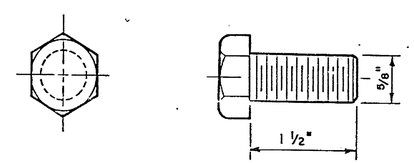
8"X8" WOOD POST AND BLOCK ASSEMBLY FOR GALVANIZED STEEL BEAM GUARDRAIL



	L	THREAD LENGTH
SPLICE BOLTS	1 1/4"	FULL LENGTH THREAD
RAIL TO BLOCK BOLTS	2"	1 1/2" MIN. THREAD LENGTH
SHORT RAIL TO WOOD POST BOLTS AND SHORT WOOD POST BOLTS	16"	2 1/2" MIN. THREAD LENGTH
LONG RAIL TO WOOD POST BOLTS AND LONG WOOD POST BOLTS.	24 1/2"	2" MIN. THREAD LENGTH

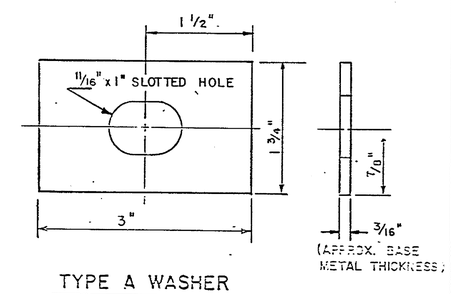


5/8" ø RECESS NUT

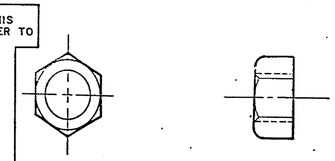


5/8" ø HEX BOLT

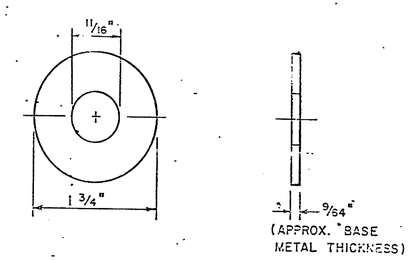
(BRACKET TO POST BOLTS)



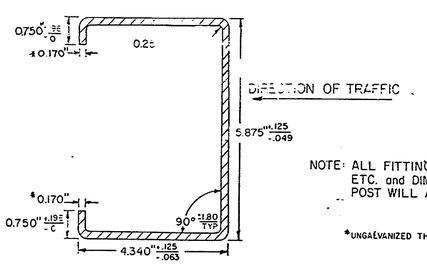
TYPE A WASHER



5/8" ø HEX NUT



STEEL WASHER

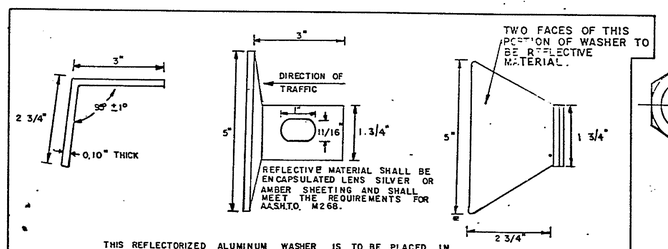


NOTE: ALL FITTINGS, NUTS, BOLTS, BLOCKS, WASHERS, ETC. and DIMENSIONS USED FOR W6x9 STEEL POST WILL APPLY TO 6"C STRONG POST.

*UNGALVANIZED THICKNESS

GALVANIZED STEEL BEAM GUARDRAIL 6"-C-STRONG POST

MATERIAL - ASTM-A570- WITH MECHANICAL PROPERTIES = TO A36
GALVANIZING - AASHTO - M111 (ASTM A123)



THIS REFLECTORIZED ALUMINUM WASHER IS TO BE PLACED IN VALLEY OF BEAM WHEN MOUNTING BEAM ONTO EACH FIFTH POST. WASHER SHALL MEET SPECIFICATION REQUIREMENTS FOR ASTM B209 ALLOY 5052 - H32.

COST OF REFLECTORIZED WASHER TO BE INCIDENTAL TO SECTION 715 - GALVANIZED STEEL BEAM GUARDRAIL.

REFLECTORIZED WASHER

COUNTY	CONTRACT	P.B.L. REG. NO.	STATE	FED. AID PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	89-074-04	2	DEL.		16	25

STANDARD SHEET G-5

RAIL ELEMENTS - GALVANIZED STEEL BEAM GUARDRAIL

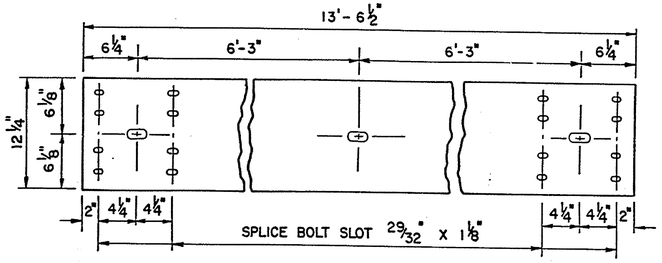
PREL. TRACING Y.N.C. DESIGN _____ CHKD. E.L.W.

REVISIONS

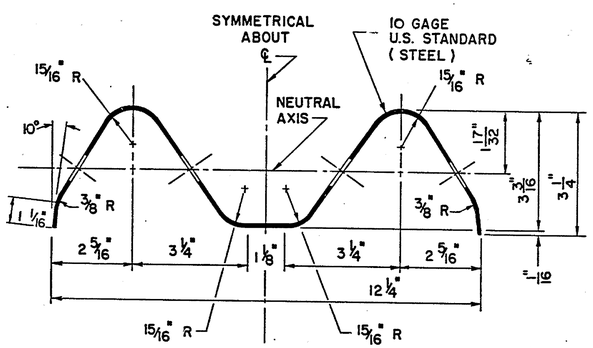
ADDED NOTES REFERRING TO GAGES. 10-27-71 J.T.B.
ADDED NOTE REFERRING TO C-POST 4/8/74 R.T.C.
ADDED STD. TERMINAL SECTION MODIFIED NOTE 3/12/76
ADDED BACK-UP PLATE NOTE. 5/11/76 R.F.R.
REVISED TERMINAL CONNECTOR NOTE & DELETED STD. TERMINAL SECTION MOD. 8/4/76 R.F.R.

APPROVED _____ DIRECTOR OF HIGHWAYS 8-19-70 DATE

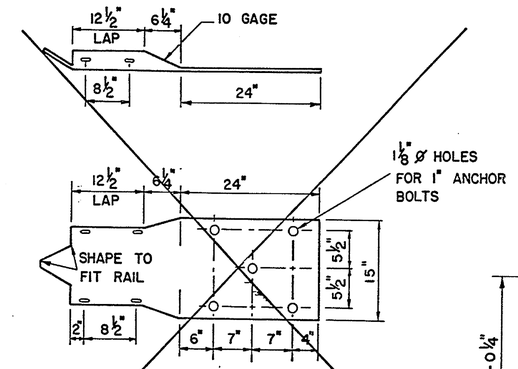
_____ DEPUTY DIRECTOR-CHIEF ENGINEER 8/19/70 DATE



DETAIL TYPICAL RAIL SECTION

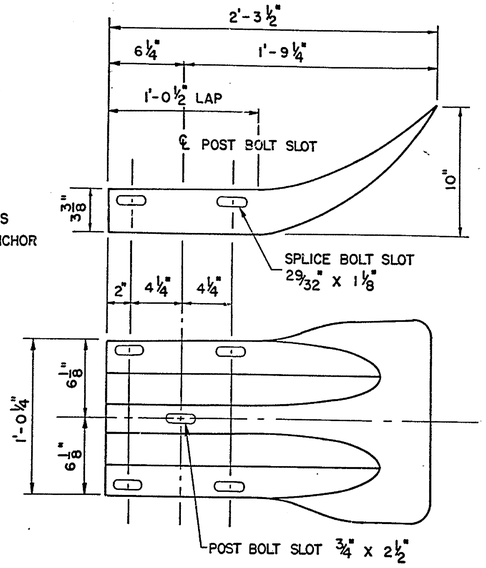


DETAIL RAIL ELEMENT



STANDARD TERMINAL SECTION MODIFIED

ONLY TO BE USED WHEN CONNECTING TO EXISTING STRUCTURE.



END SECTION (FLARED)

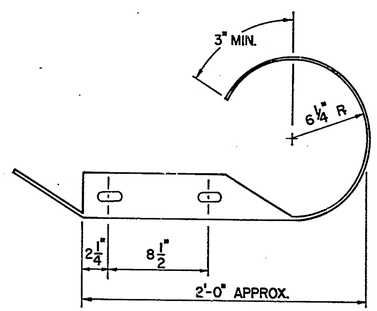
NOTE:

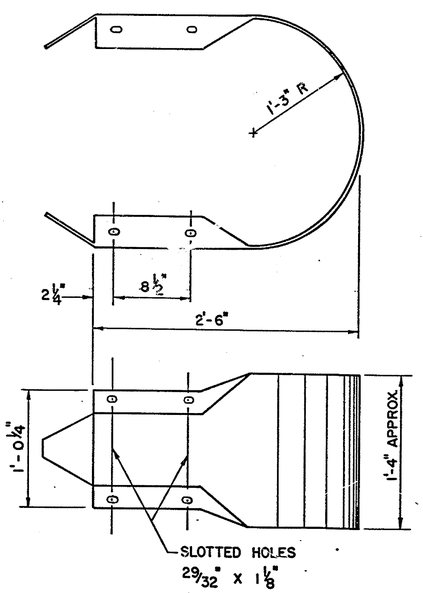
RAIL ELEMENTS INCLUDE THE BASIC RAIL ELEMENTS, SPLICES, AND SPECIAL RAIL SECTIONS SUCH AS TERMINALS FOR "W" BEAM GUARDRAIL AND "W" BEAM MEDIAN BARRIER SYSTEMS.

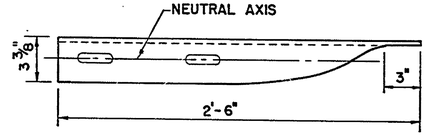
USE 10 GAGE UNLESS OTHERWISE SPECIFIED.

~~STANDARD TERMINAL SECTION MODIFIED TO BE 10 GAGE.~~

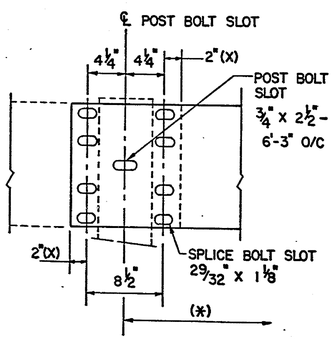
SEE STANDARD SHEET G-4 FOR ALTERNATE 6"C STRONG POST DETAIL.





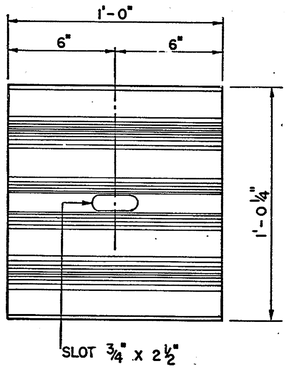


(X) TOLERANCE $+1\frac{1}{4}" - \frac{1}{4}"$



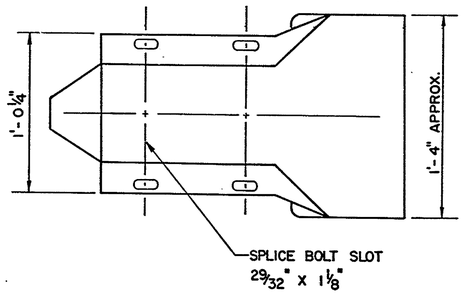
(*) DISTANCE C. TO C. OF END POST BOLT SLOTS 12'-6" OR 25'-0". DISTANCE C. TO C. OF INTERMEDIATE POST BOLT SLOT 6'-3" UNLESS OTHERWISE SPECIFIED.

BEAM SPLICE



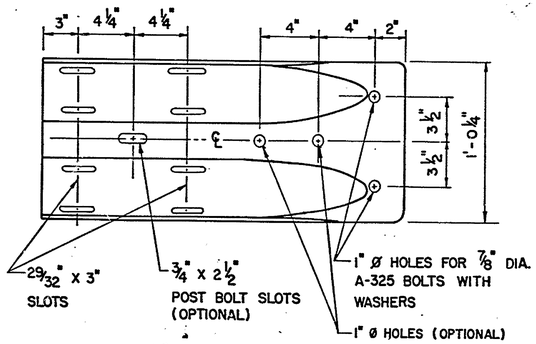
BACK-UP PLATE

BACK-UP PLATE SHALL BE PLACED BEHIND GUARDRAIL AT NON-SPLICE POSTS.

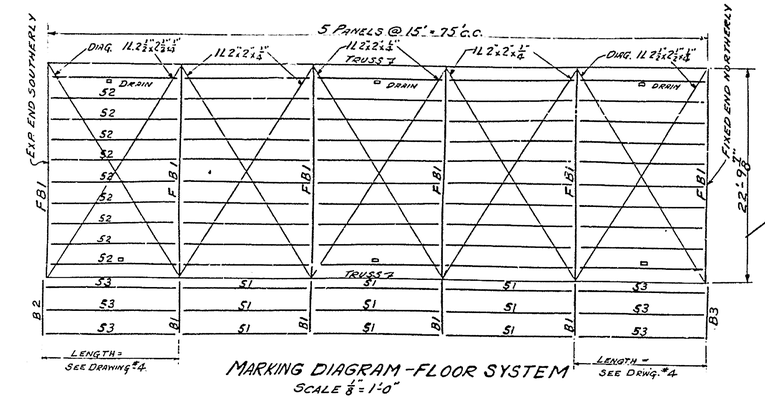


END SECTION (ROUNDED)

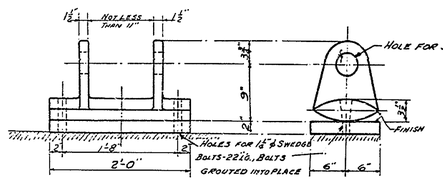
BUFFER END SECTION



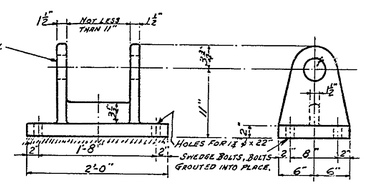
TERMINAL CONNECTOR



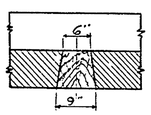
MARKING DIAGRAM - FLOOR SYSTEM
SCALE 3/8" = 1'-0"

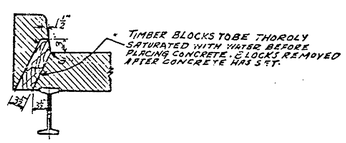


EXPANSION SHOE - CAST STEEL
SCALE 1" = 1'-0"
2 REQ'D.

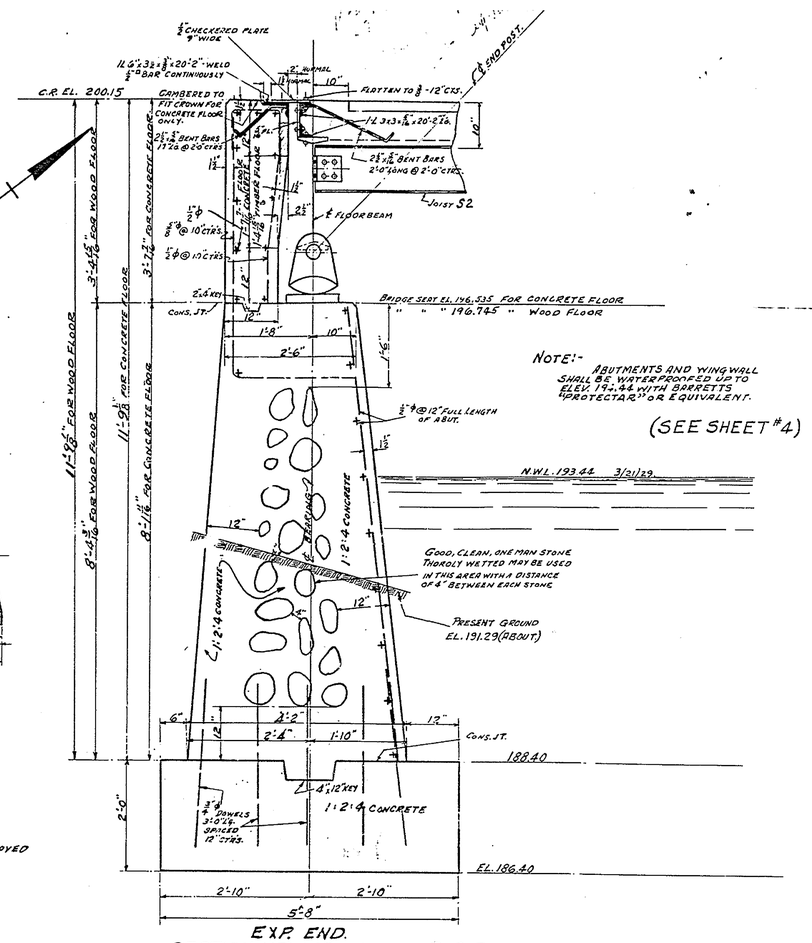


FIXED SHOE - CAST STEEL
SCALE 1" = 1'-0"
2 REQ'D.

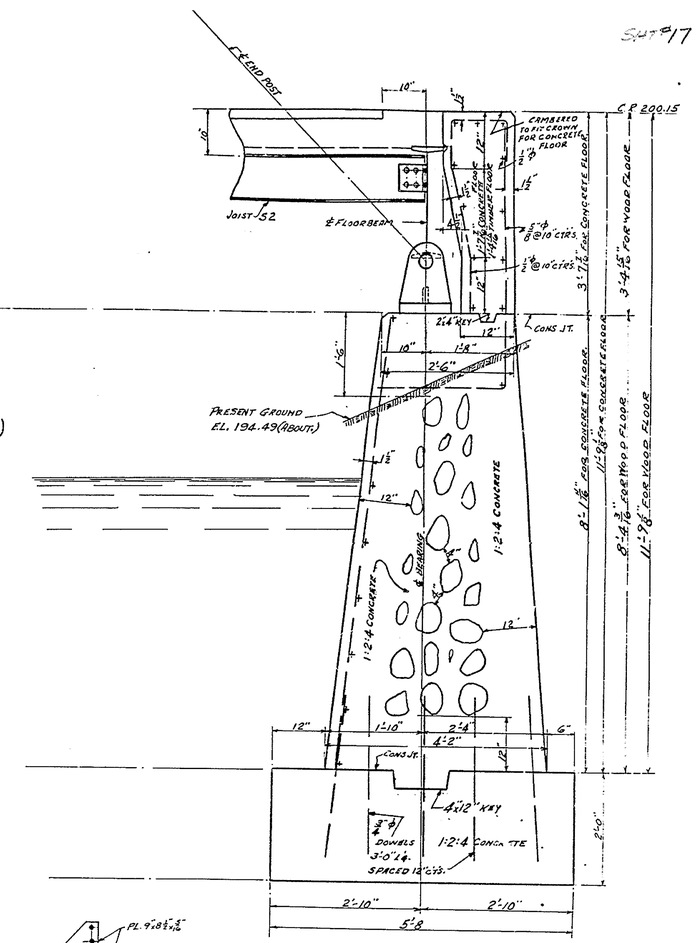




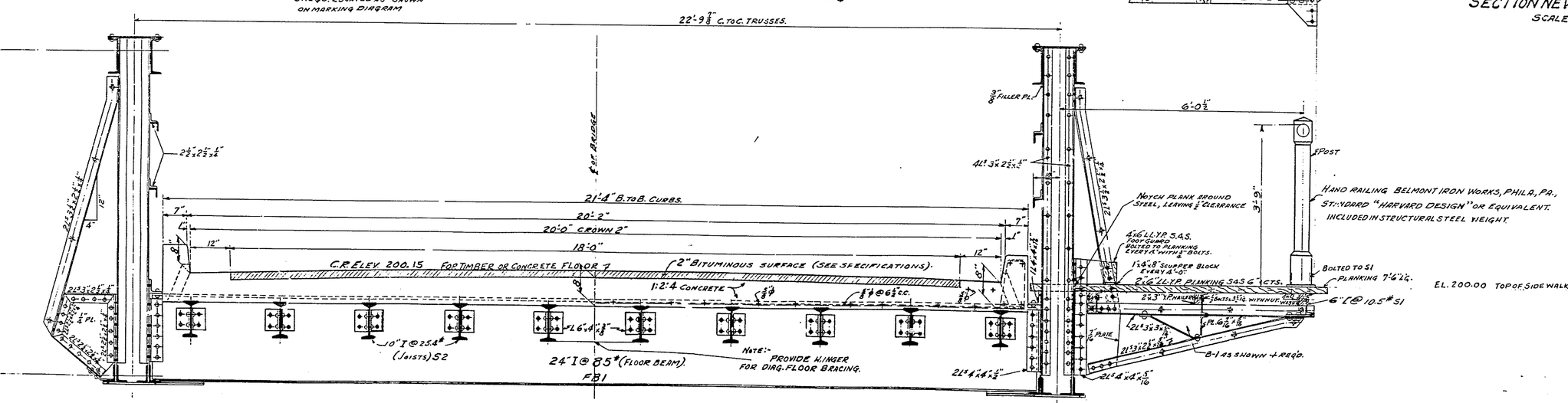
DRAINS
3/8" = 1'-0"
6 REQ'D. LOCATED AS SHOWN ON MARKING DIAGRAM



EXP. END.
SECTION NEW ABUTMENT @ C.R.
SCALE 3/4" = 1'-0"



FIXED END
SECTION NEW ABUTMENT @ C.R.
SCALE 3/4" = 1'-0"



CROSS SECTION
SHOWING CONCRETE SLAB AND TIMBER SIDEWALK.

BRIDGE Nº 112
RED CLAY CREEK
LEVY COURT
NEW CASTLE COUNTY
DELAWARE
1929

NAME PLATE
2 - REQ'D.

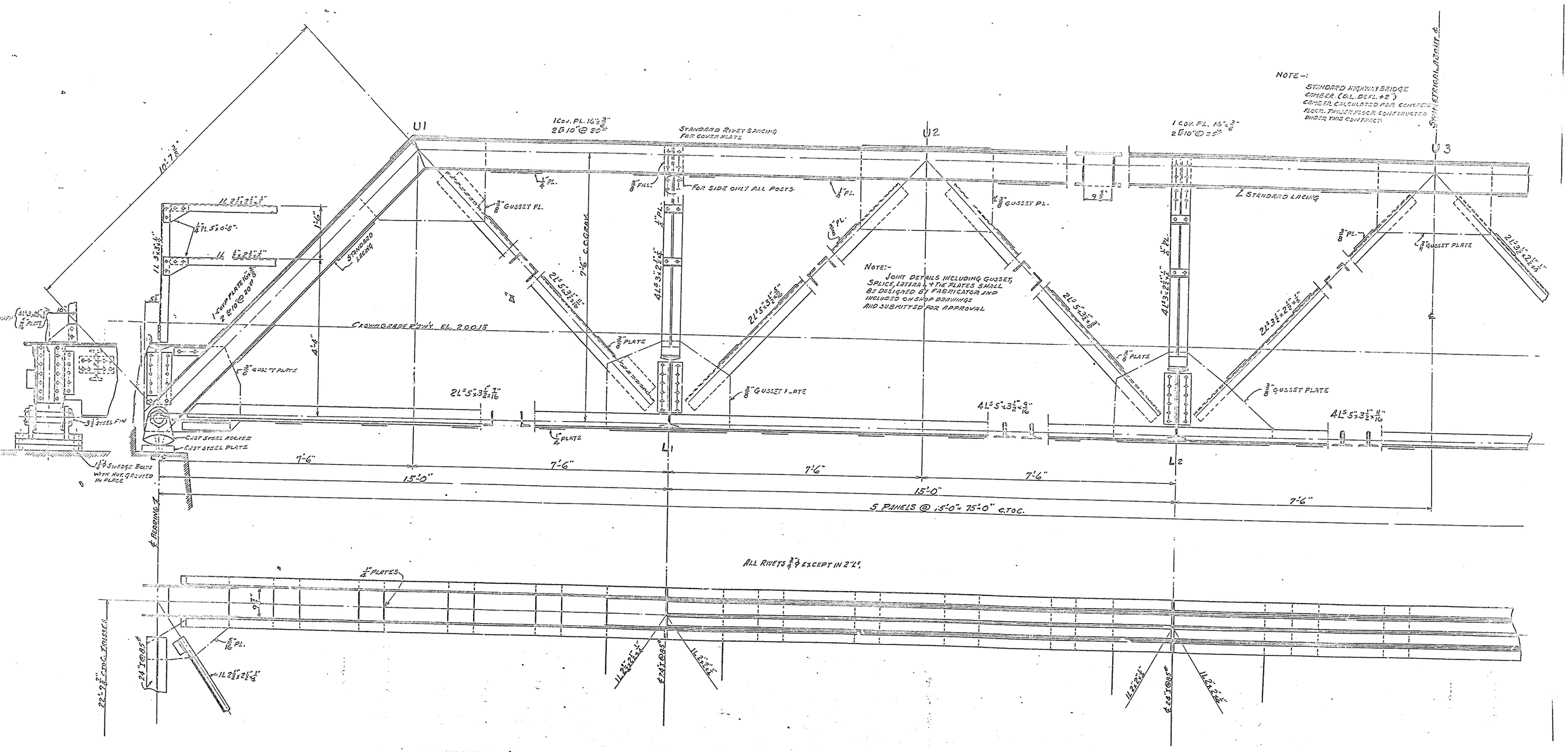
BRIDGE Nº 112
DETAILS

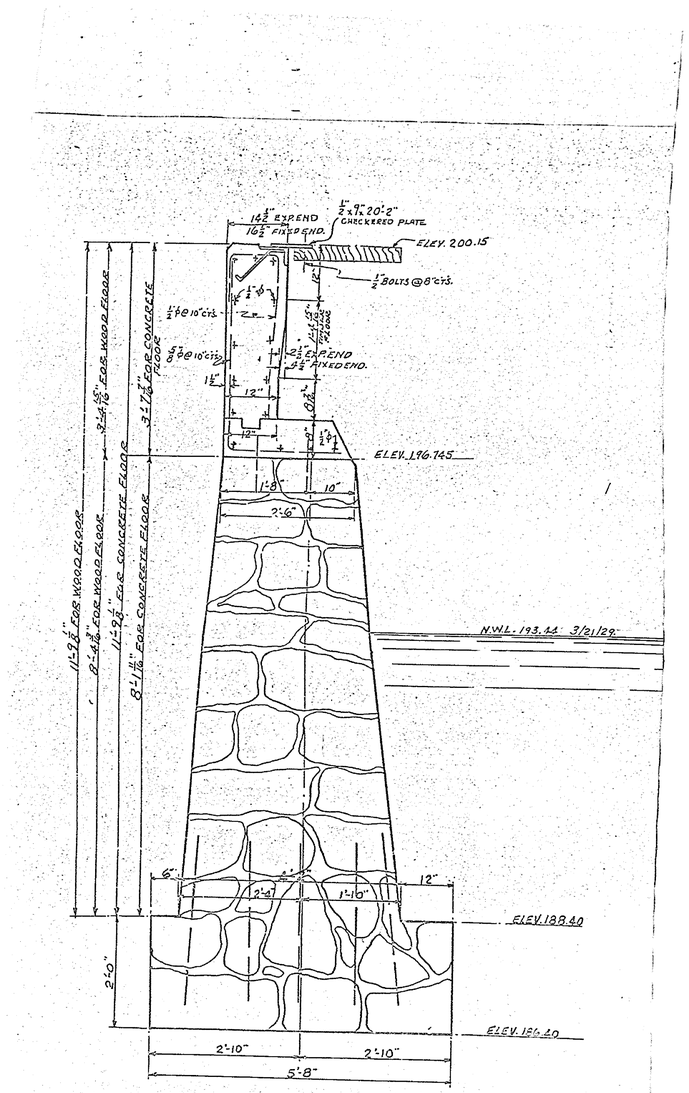
LEVY COURT
NEW CASTLE COUNTY
OFFICE OF COUNTY ENGINEER
WILMINGTON, DELAWARE

DATE JULY 1929.
SCALE 3/4" = 1'-0"
DRAWN BY E.R.I.R.
TRACED BY H.W.R.

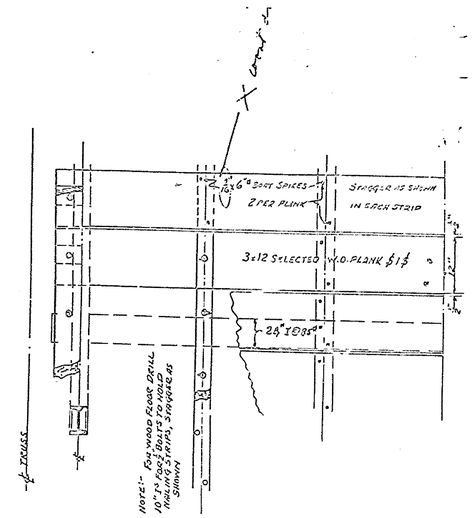
APPROVED BY
COUNTY ENGINEER

DRAWING Nº	POCKET Nº 6
1 OF 4	FOLDER Nº 1

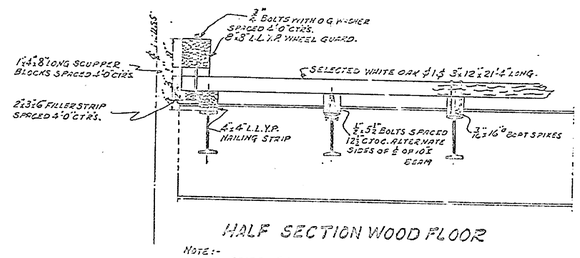

NOTE -:
STANDARD HIGHWAY BRIDGE CAMBER. (D.L. DEFL. +2") CAMBER CALCULATED FOR CONCRETE FLOOR. TIMBER FLOOR CONSTRUCTED UNDER THIS CONTRACT.
U1
U2
U3
L1
L2
1 COV. PL. 16"x3/8" 2 [10" @ 20#
1 COV. PL. 16"x3/8" 2 [10" @ 25#
STANDARD RIVET SPACING FOR COVER PLATE
FOR SIDE ONLY ALL POSTS.
STANDARD LACING
NOTE:-
JOINT DETAILS INCLUDING GUSSET, SPLICE, LATERAL + TIE PLATES SHALL BE DESIGNED BY FABRICATOR AND INCLUDED ON SHOP DRAWINGS AND SUBMITTED FOR APPROVAL
CROWN GRADE R'DWY. EL. 200.15
CAST STEEL ROCKER
CAST STEEL PLATE
1 1/4" ϕ STEDGE BOLTS WITH NUT, GROUTED IN PLACE
7'-6"
15'-0"
5 PANELS @ 15'-0" = 75'-0" C.TO C.
ALL RIVETS 3/4" ϕ EXCEPT IN 2" L's.
1/4" PLATES
22'-9 7/8" C.TO C. TRUSSES



MASONRY ABUTMENT



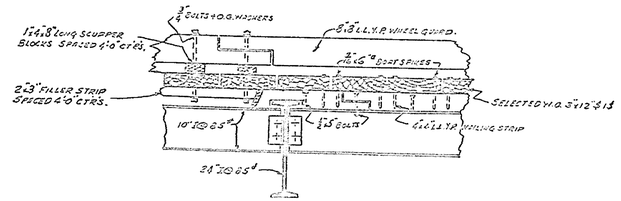
HALF WOOD FLOOR PLAN



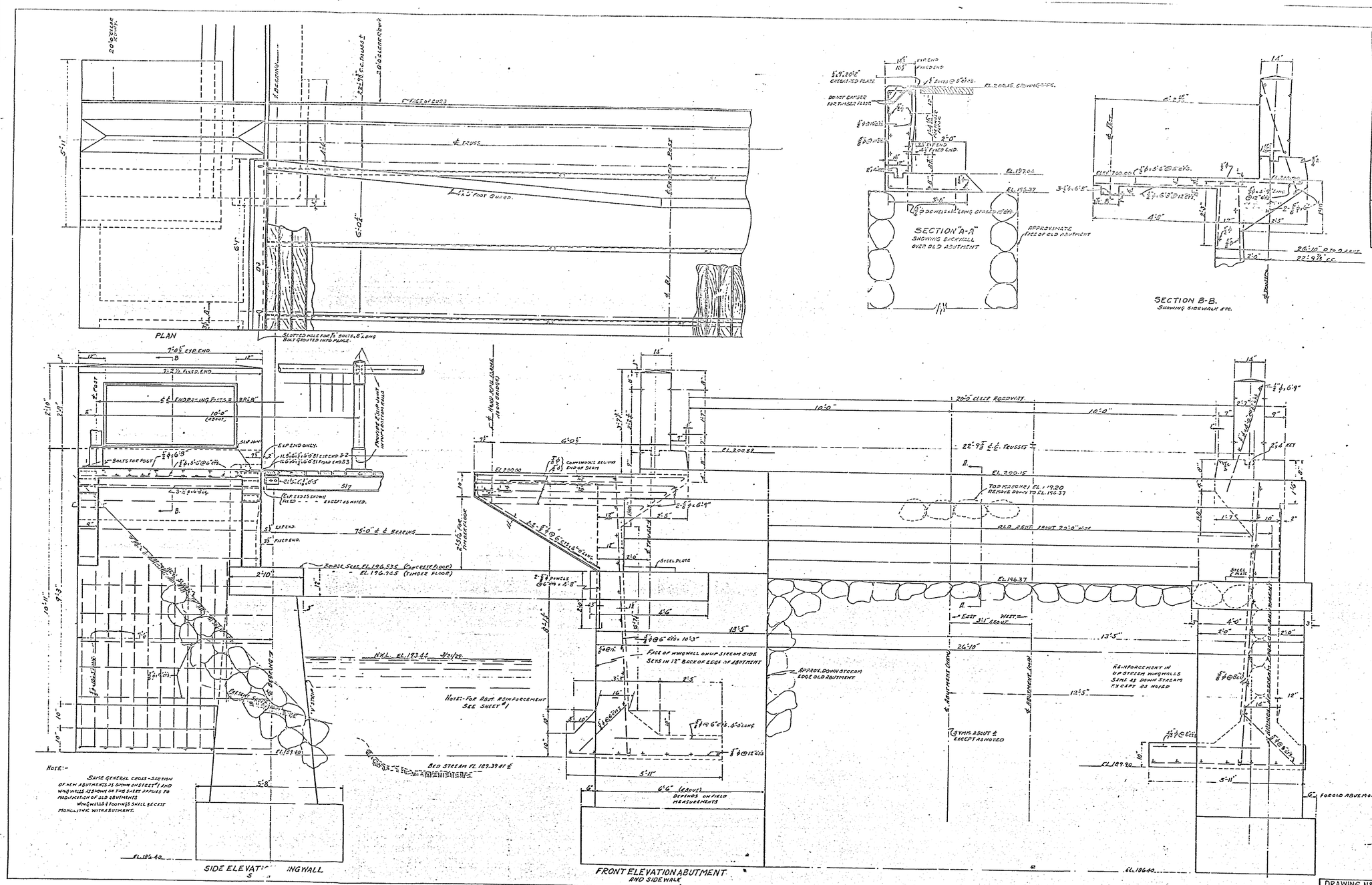
HALF SECTION WOOD FLOOR

NOTE:- BRIDGE BEARINGS ELEV. AS SHOWN ELSEWHERE SHALL BE ALTERED IF TIMBER FLOOR IS ACCEPTED

NOTE:- ALL MATERIAL USED IN BOLTS & NUTS SHALL BE 1ST GRADE WROUGHT IRON



LONGITUDINAL SECTION WOOD FLOOR
SHOWING JOINTS IN WHEEL GUARDS AND HAIL STRIPS



-NOTES-

TEMPORARY APPROACHES.-
TEMPORARY APPROACHES SHALL BE MAINTAINED IN USABLE CONDITION WITH SURFACING OF CINDERS OR SUITABLE GRAVEL.

BACKFILL.-
PROVIDE NECESSARY BACKFILL BETWEEN AND OUTSIDE OF WINGWALLS AND FOR A DISTANCE OF 25'-0" FROM THE ENDS THEREOF.

RIP RAP.-
RIP RAP SHALL BE PLACED AS SHOWN ALONG WINGWALLS UP TO ELEV. 196.00 AND ALONG ENTIRE LENGTH OF ABUTMENTS.

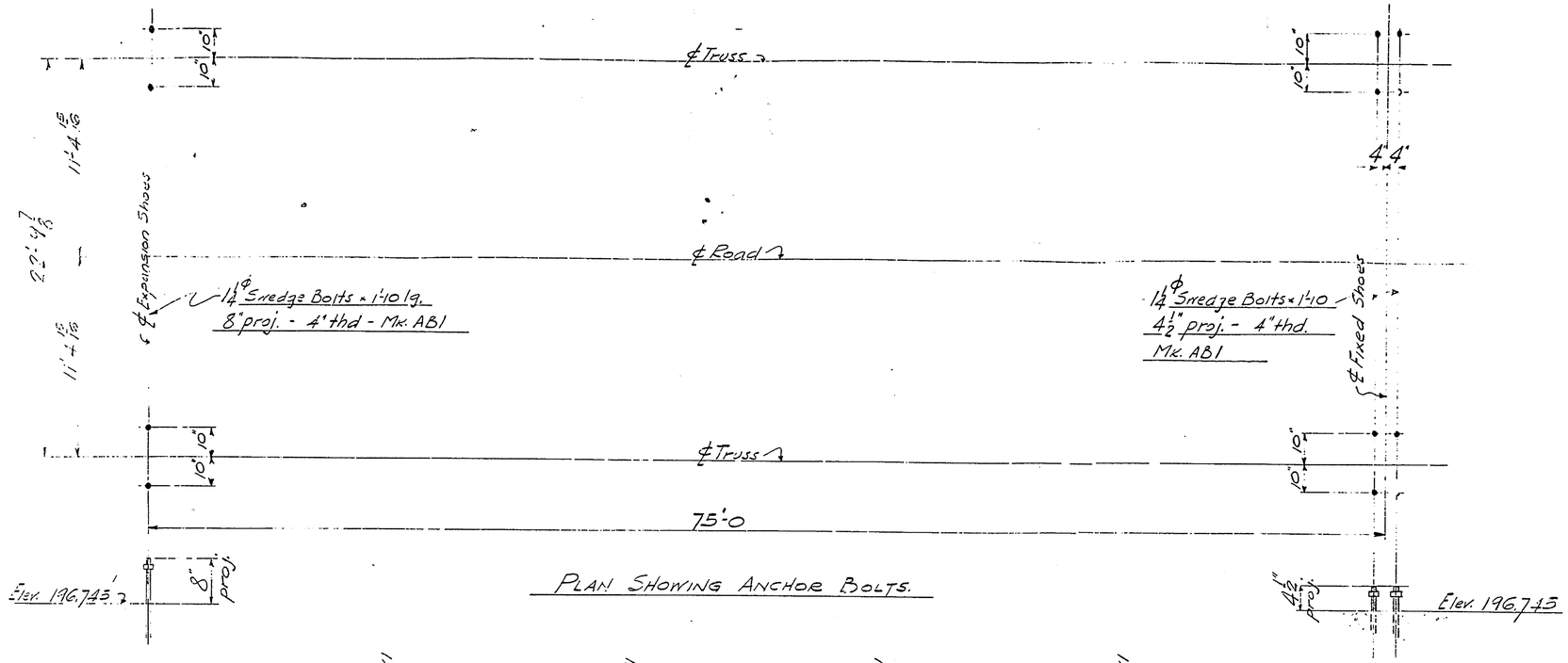
REINFORCEMENT
ALL REINFORCEMENT SHALL BE SPLICED 40 DIAMETERS.

BRIDGE #112
ABUTMENTS-MODIFIED.

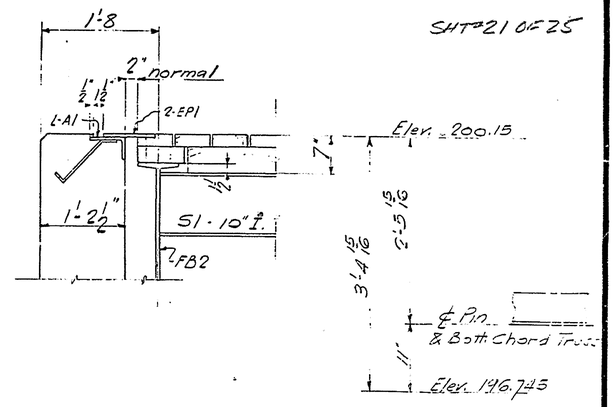
LEVY COURT
NEW CASTLE COUNTY
OFFICE OF COUNTY ENGINEER
WILMINGTON DELAWARE

DATE JULY 24TH 1929
SCALE 3/16"=1'-0"
DRAWN BY [illegible]
TRACED BY [illegible]
APPROVED BY [illegible]
COUNTY ENGINEER

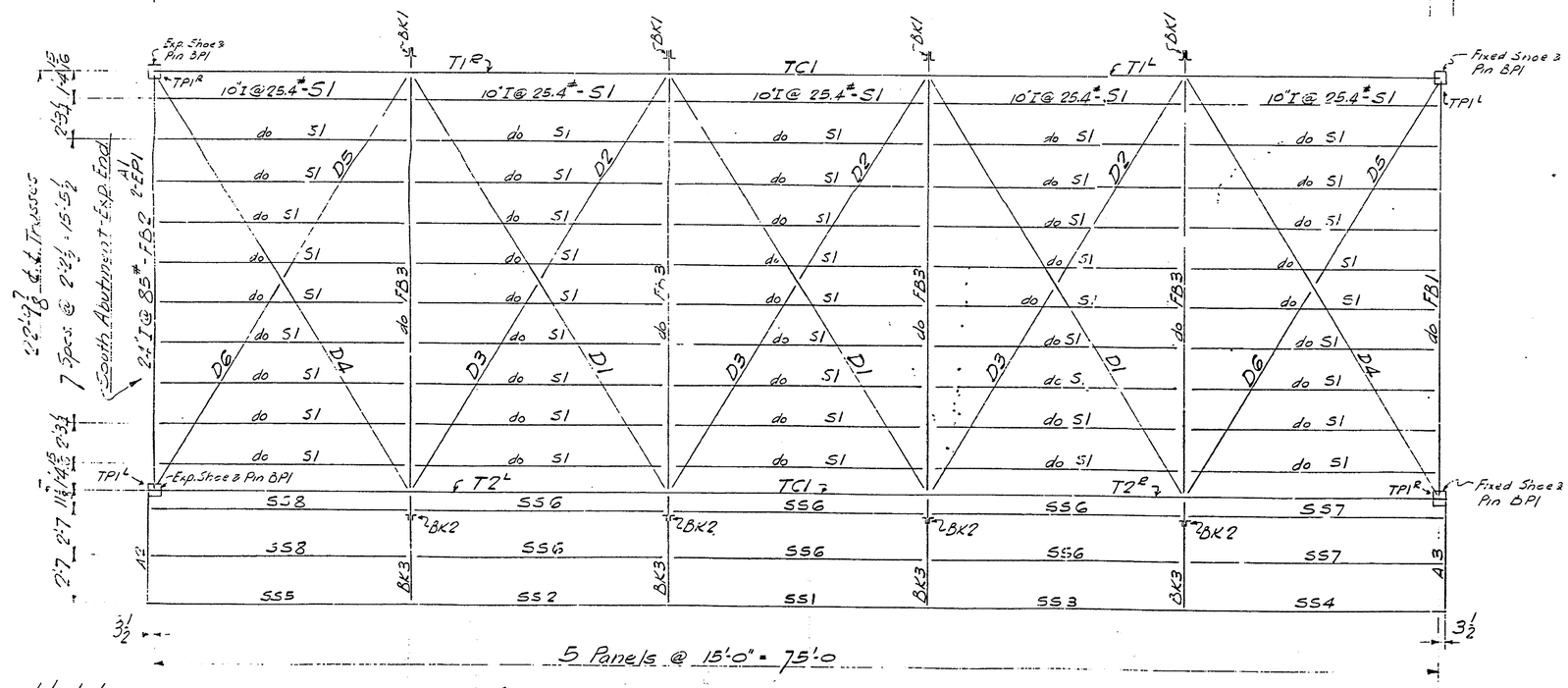
DRAWING Nº	POCKET Nº 6
4 OF 4	FOLDER Nº 1

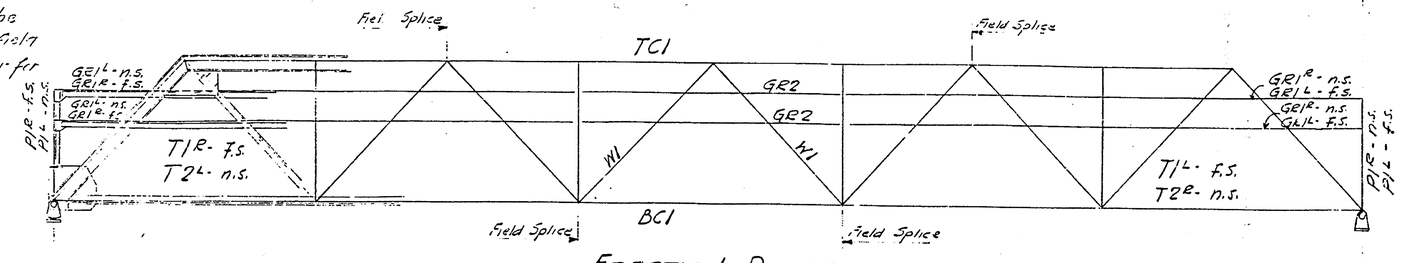


PLAN SHOWING ANCHOR BOLTS.



Section Thru Expansion End Of Bridge





ERECTION DIAGRAM

Erector's Note:
In top chord field splices drive flange rivets first.

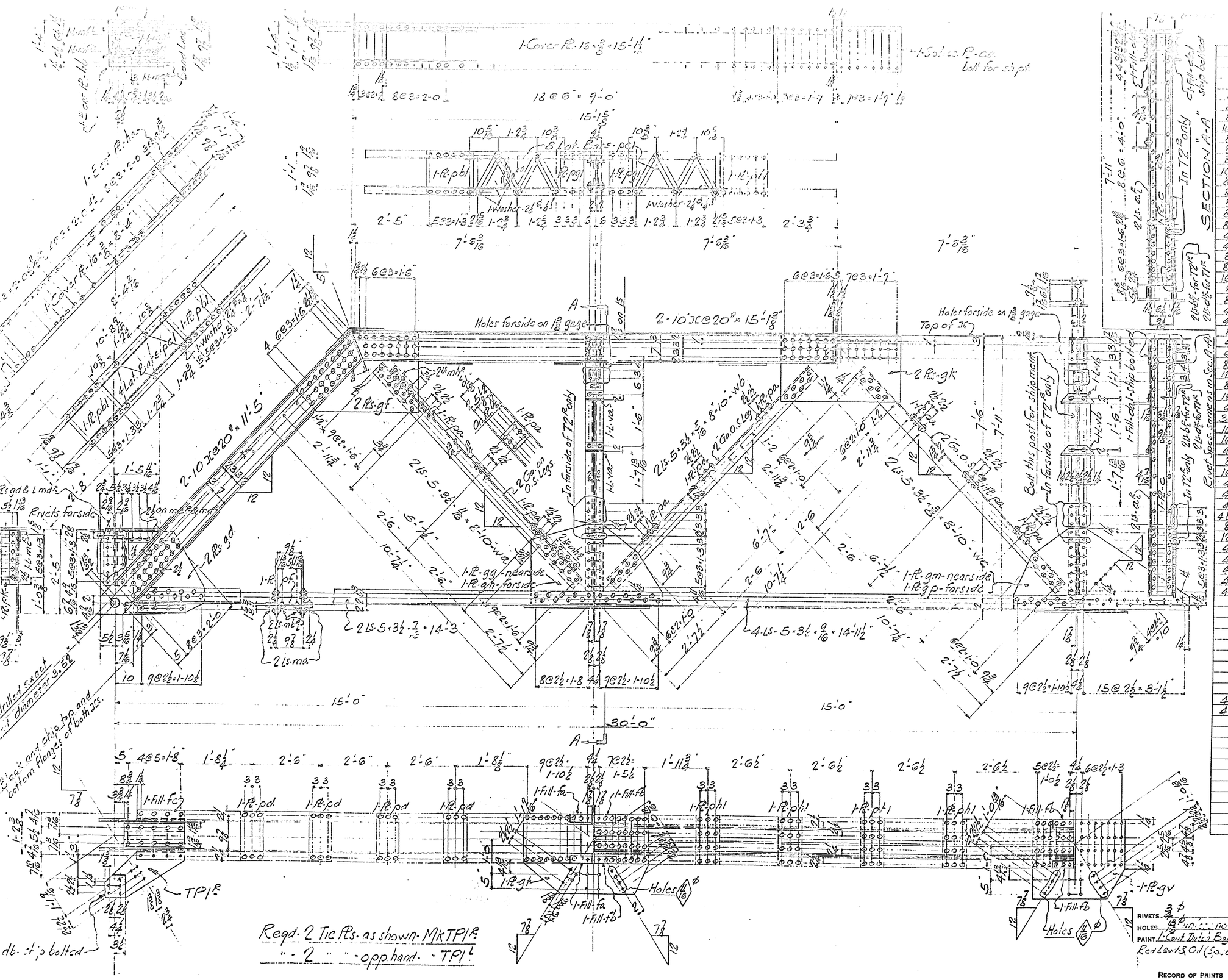
Wood Bolts not furnished by Belmont Iron Works

ANCHOR BOLT AND ERECTION PLAN

BRIDGE # 112
OVER RED CLAY CREEK
LEVY COURT
New Castle County, Del.

BELMONT IRON WORKS
PHILA., PA.

MADE BY W.H.F. DATE 9-25-[illegible]
CHECKED BY CMB DATE 9-25-[illegible]
REVISED
ORDER No. 29-4140 SHEET No. E1



Reqd: 2 Tie Pls. as shown - MkTP1R
" - 2 " " - opp. hand - TP1L

Reqd - One Truss - as shown and noted - Mk - T1R
" - One " - (opp hand to T1R) — " - 11L

Reqd - One Truss - as shown and noted - Mk - T2R
" - One " - (opp. hand to T2R) — " - T2L

	One Truss - as shown and noted - Mk T1R						
	One " - as shown and noted - T1L						
	One " - as shown and noted - T2R						
	One " - as shown and noted - T2L						
8	Ls-10 × 20 × 1/2	15	5/8				ORD
8	do	11	5/8				ORD
8	Ls-5 × 3 1/2 × 7/16	14	5/8				ORD
16	Ls-5 × 3 1/2 × 9/16	14	11/16				ORD
8	Ls-5 × 3 1/2 × 11/16	5	10	wal			
8	Ls-5 × 3 1/2 × 7/16	5	10	wal			
8	Ls-5 × 3 1/2 × 9/16	8	10	wal			ORD
16	Ls-5 × 3 1/2 × 1/2	7	5	6 1/2			ORD
8	do	7	5	6 1/2		For T1R	ORD
8	Ls-3 × 3 1/2 × 3/8	0	6 1/2				
8	do	0	1 1/2	161			
8	Ls 3 1/2 × 3 × 1/2	1	1 1/2				
8	Ls 2 × 3 × 1/2	1	1 1/2	161			
4	Ls-4 × 3 × 1/2	1	0 1/2	161			
4	Ls- do	1	1 1/2	161			
8	Ls-4 × 3 × 1/2	1	3 1/2	161			
8	do	1	6 1/2	161			
16	Ls-3 1/2 × 3 × 1/2	1	3 1/2	161			
8	Pl-28 × 3/8	3	3 1/2	161			
8	Pl-28 × 3/8	3	7	161			
4	Pls-28 × 3/8	4	1 1/2	161			
4	Pl-28 × 3/8	4	1 1/2	161			
8	Pl-28 × 3/8	3	2 1/2	161			
4	Pl-28 × 3/8	5	3 1/2	161			
4	Pl-28 × 3/8	5	3 1/2	161			
8	Pl-38 × 3/8	7	5	161			ORD
16	Fills-6 1/2 × 3/8	0	3 1/2	161			
8	Fills-3 × 1/2	0	2	161			
16	Fills-3 × 1/2	0	2	161			
4	Fills-3 × 3/8	1	1 1/2	161			
36	Pl-8 × 3/8	0	7 1/2	161			
16	Pls-15 1/2 × 1/2	1	5 1/2	161			
16	Pl-8 1/2 × 1/2	1	5	161			
4	Pl-8 × 3/8	1	10 1/2	161			
8	Pl-32 × 1/2	1	3 1/2	161			
16	Pl-8 1/2 × 1/2	1	5	161			
4	Pl-8 × 3/8	1	6 3/4	161			
4	Pl-27 × 7/16	2	10 1/2	161			
4	Pls-27 × 7/16	2	10 1/2	161			
48	Lat. Bars-2 1/2 × 1/2	1	5 3/4	161			
8	Ls-3 × 2 1/2 × 1/2	7	5 5/16	161		For T1R	ORD
12	Washers 2 1/4 ϕ × 1/4 thick						
4	Pls-16 × 3/8	15	1 1/2				ORD
4	Pls-16 × 3/8	8	4				ORD
4	Pl-16 × 3/8	2	0	161	Bent		
4	Pl-16 × 3/8	2	4	161	Bent		
4	Pls-16 × 3/8	3	11 1/2	161			
	2 Tie Pls - as shown - Mk - TP1R						
	2 " " - opp. hand - " - TP1L						
4	Pls 15 1/2 × 3/8	1	2	5 3/4			
4	Fills 7 × 7/16	0	7 1/2	161			

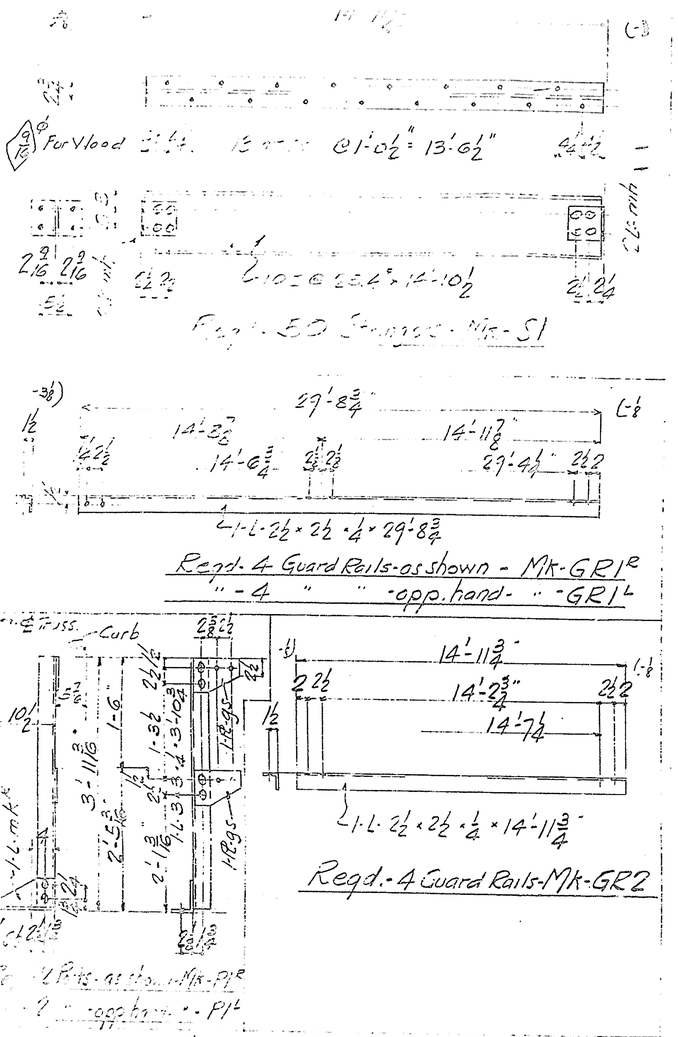
BRIDGE #112
OVER RED CLAY CREEK
LEVY COURT
New Castle County, Del.

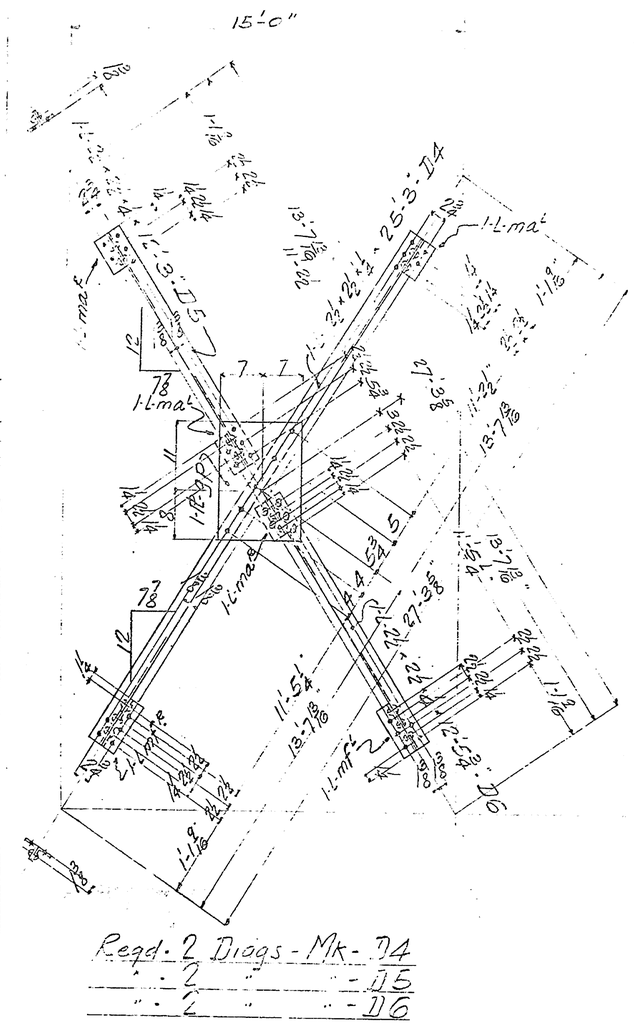
BELMONT IRON WORKS
PHILA., PA.

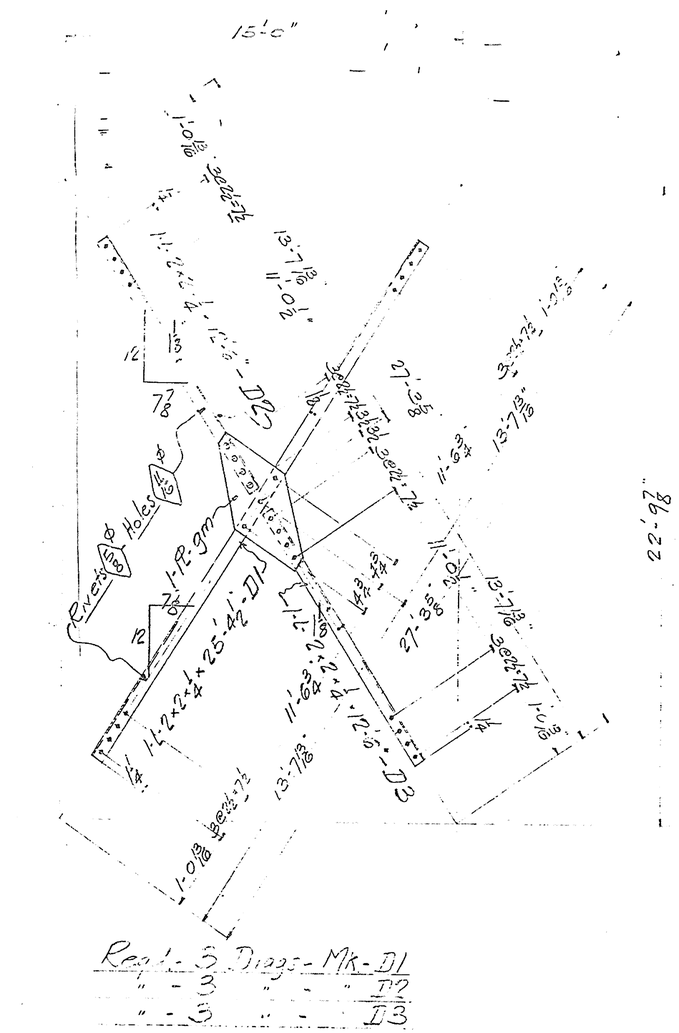
MADE BY C.V.S. DATE 9-27-27
CHECKED BY W.H.E. DATE 9-30-27
REVISED

RECORD OF PRINTS

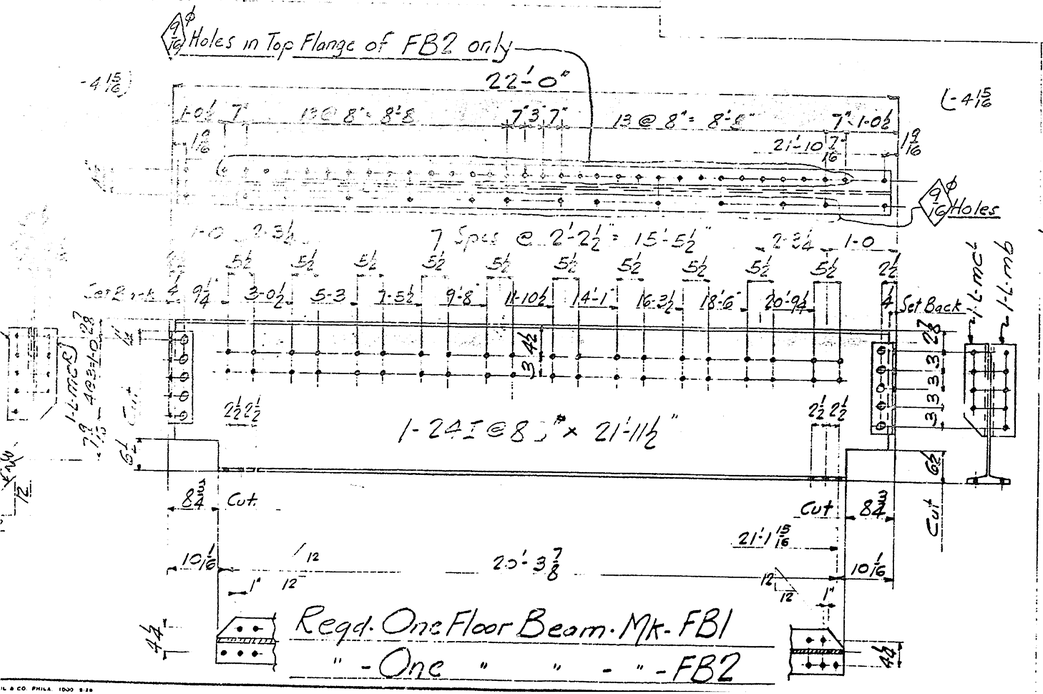
C-1

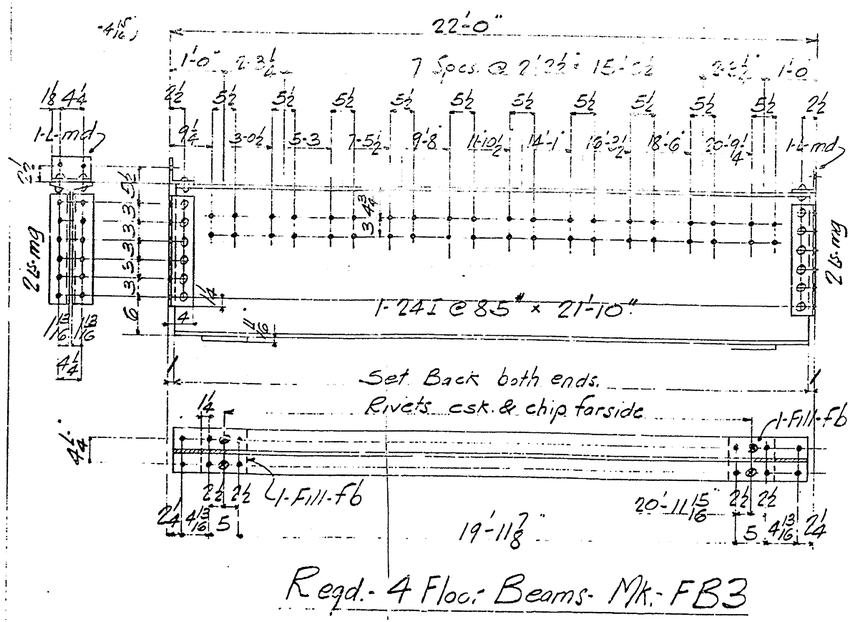






	3 Diags - D1					
	3 " - D2					
	3 " - D3					
3	Ls. 2 × 2 × ¼	25	3		D4	
3	"	12	3		D5	
3	"	12	3		D6	
3	Pls. 12 × 5/16	1	11	gm2		
	2 Diags - D4					
	2 " - D5					
	2 " - D6					
2	Ls. 2½ × 2½ × ¼	25	3		D4	
2	do	12	3		D5	
2	do	12	3		D6	
2	Pls. 14 × 5/16	1	5½	gm2		
8	Ls. 2½ × 2½ × ¼	0	6¾	mc2	4 R.-2½	
4	do	0	8¾	mf2	2 R.-2½	
	One Floor Beam - FB1					
	One " " - FB2					
2	Ls. 24 @ 85#	21	11½			ORD.
4	Ls. 4 × 4 × ½	1	2½	mb2		
4	do	1	2½	mc2	2 R.-2½	
	4 Floor Beams - FB3					
4	Is. 24 @ 85#	21	10			ORD.
16	Ls. 4 × 3½ × ½	1	5½	mg2		
8	Ls. 4 × 4 × 7/16	0	6½	md2		
8	Fills - 6½ × 11/16	0	7½	fb2		
	50 Stringers - S1					
50	Is. 10 @ 25.4	14	10½			ORD.
200	Ls. 6 × 4 × ⅜	0	5½	mh2		
	4 Guard Rails - as shown - GR1R					
	4 " " - opp. hand - GR1L					
8	Ls. 2½ × 2½ × ¼	29	3¾			
	4 Guard Rails - GR2					
4	Ls. 2½ × 2½ × ¼	14	11¾			
	2 Posts - as shown - P1R					
	2 " - opp. hand - P1L					
4	Ls. 3 × 3 × 3/8	3	10¾			
4	Ls. 5 × 3½ × 3/8	0	11½	mk2	2 R.-2½	
8	Pls. 5½ × ¾	0	7⅝	gs2		





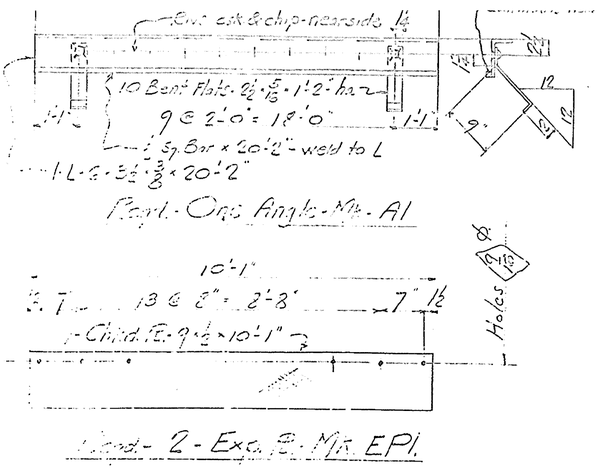
RIVETS ¾ unless noted
HOLES 13/16 unless noted
PAINT 1 Coat Dutch Boy Red Lead & Oil (Special)

RECORD OF PRINTS

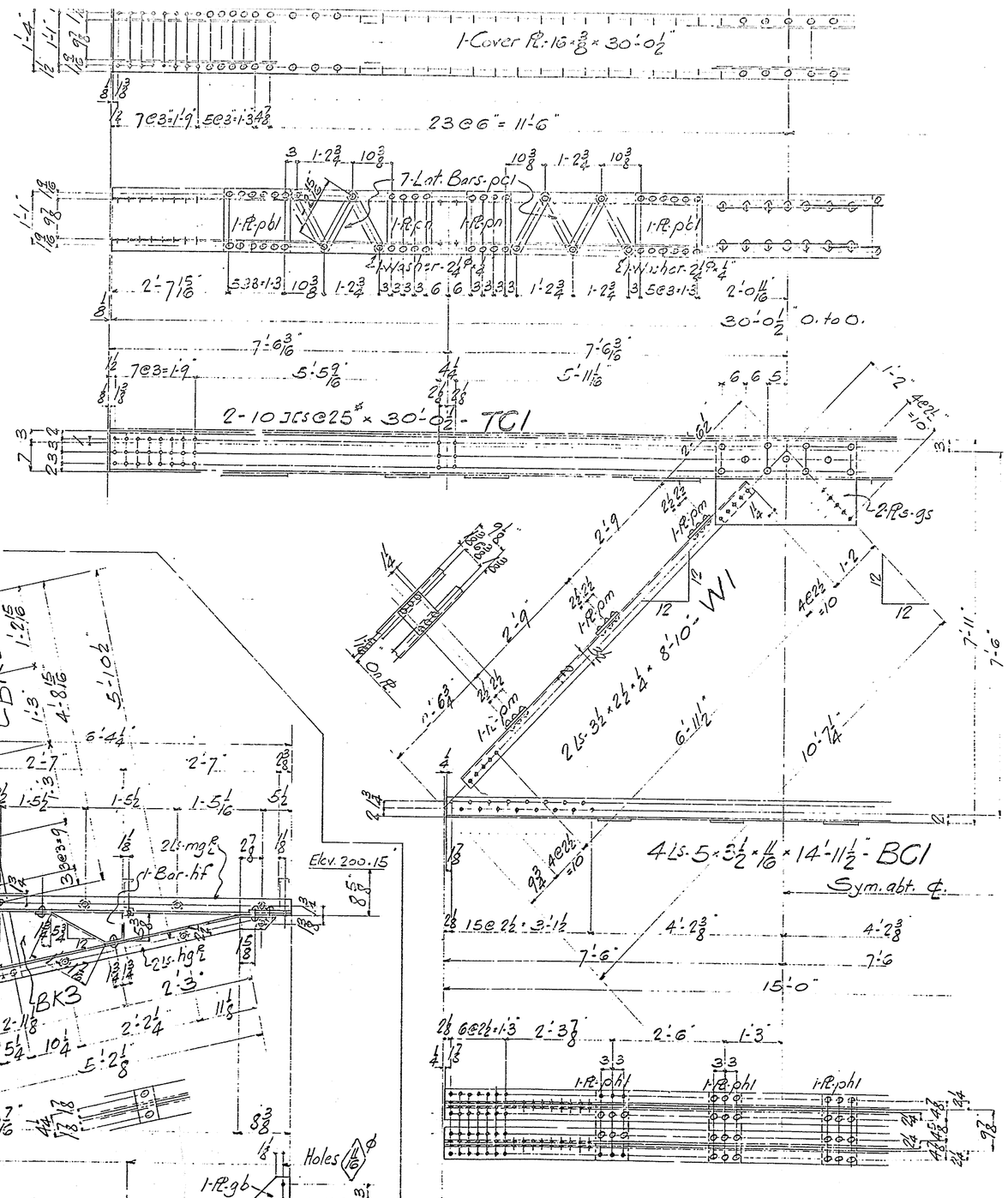
BRIDGE #112
OVER RED CLAY CREEK
LEVY COURT
New Castle County - Del.

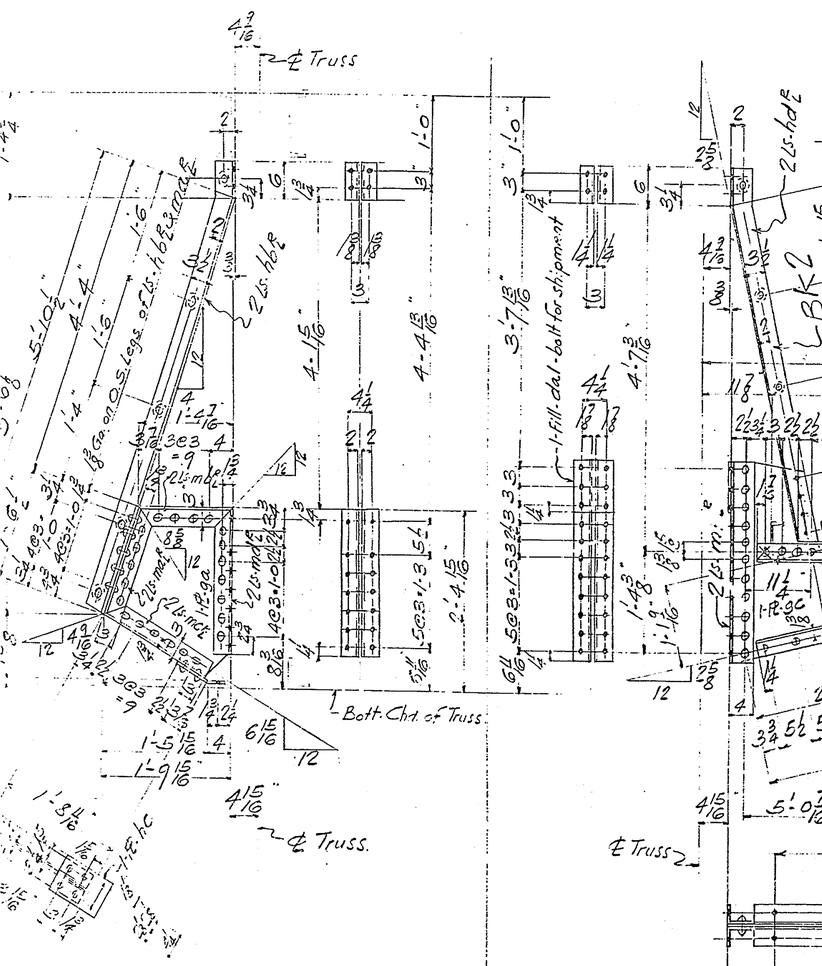
BELMONT IRON WORKS
PHILA., PA.

MADE BY CMB DATE 9-23-29
CHECKED BY W.H.F. DATE 9-27-29
REVISED
ORDER No. 12-4162 SHEET No. 2



Reqd. - 2 - Exp. Pl. Mk. EP1





Reqd. - 4 Brackets - Mk. - BK1

Reqd. - 4 Brackets - Mk. - BK2
" - 4 " - " - BK3

Reqd. - 2 Top Chords — Mk. - TC1
" - 2 Bottom Chords - " - BC1
" - 4 Diagonals — " - W1

	One Ang					
1	1-L-6-3½-⅜	20	2			
1	Bar ½ Sq.	20	2		Welded	ORD
10	Plates 2½-5/16	1	2		Bent	
	2 Exp. Pl.					
2	Chord Pl. 9-½	10	1			ORD
	4 Brackets					
8	Ls. 3½ × 2½ × ¼	6	4		Bent	
8	Ls. 3 × 2½ × ¼	1	6¼			
8	Ls. 3 × 3 × ¼	1	4½			
8	Ls. 3 × 3½ × ¼	1	8			
8	Ls. 3 × 3 × ¼	1	11¼			
4	Pls. 6½ × 5/16	1	7		Bent	
4	Pls. - 21 × ¼	2	3			
20	Washers 2¼ Pl. × ¼					
	2 Top Chords					
8	Ls. 3½ × 2½ × ¼	5	15		Bent	
12	Washers 2¼ Pl. × ½					
	4 Brackets					
8	Ls. 4 × 3½ × ⅜	2	8			
8	Ls. 3 × 3 × ⅜	5	7			
8	Ls. 3 × 2½ × ⅜	5	5		Bent	
4	Bars ½ × 5/16	2	3.5		Bent	
4	Pls. 3 × ⅜	1	2.5			
4	Pls. - 18 × ⅜	2	12			
4	Fills - 6½ × ⅜	0	8½			
24	Washers 2¼ Pl. × 1/16				thick	
	2 Top Chords - TC1					
4	Ls. - 10 @ 25	30	0½			ORD
2	Pls. - 16 × ⅜	30	0½			ORD
8	Pls. 15½ × ¼	1	5½		pbl	
8	Pls. 11½ × ¼	1	3½		pn3	
28	Bars 2½ × ½	1	5 9/16		pcl	
4	Pls. 20 × ⅜	3	0½		gs3	
8	Washers 2¼ × ¼				thick	
	2 Bott. Chords - BC1					
8	Ls. 5 × 3½ × 11/16	14	11½			ORD
8	Pls. 8½ × ¼	1	5		pt1	
	4 Diagonals - W1					
8	Ls. 3½ × 2½ × ¼	8	10			ORD
12	Pls. 9 × ¼	0	7½		pm3	

RIVETS ¾ ϕ
HOLES 13/16 ϕ unless noted
PAINT 1 Coat Dutch Boy Red Lead & Oil (Special).

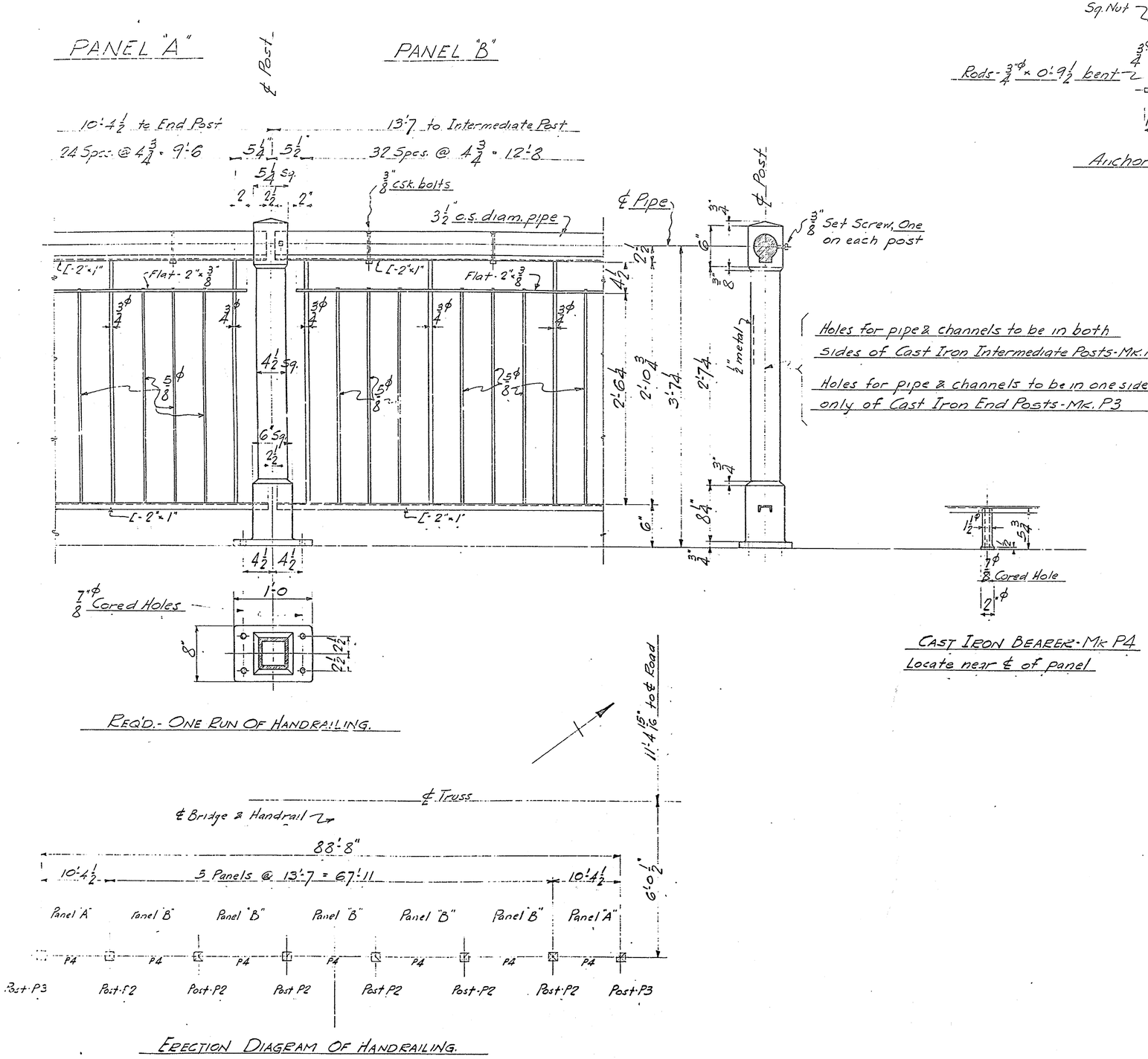
BRIDGE #112
OVER RED CLAY CREEK
LEVY COURT
New Castle County - Del.

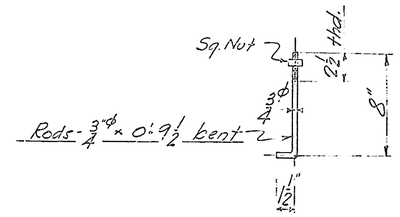
RECORD OF PRINTS

6-1

BELMONT IRON WORKS
PHILA., PA.

MADE BY CMB DATE 9-25-27
CHECKED BY W.H.E. DATE 9-27-27
REVISED
ORDER NO. 29-4140 SHEET NO. 3





Anchor Bolts for P3

CAST IRON BEARER-Mk P4
Locate near ℄ of panel

ORD. Complete

	ONE RUN OF HANDRAILING			
6	Cast Iron Intermediate Posts-Mk.			
2	Cast Iron End Posts-Mk. P3			
8	Set Screws-3/8"	0	1¼	
5	3" Pipes	13	4½	(pipe must
2	do	10	2	do
10	[s-2"×1"	13	4½	
4	do	10	2	
5	Flats-2"×3/8	13	0	
2	do	9	10	
59	Rods-¾φ	2	11½	
156	Rods-5/8φ	2	7¼	
52	Csk. Hd. Bolts-3/8"	0	4¾	
8	Rods-¾φ	0	9½	bent for P3
8	Nuts-¾"			
7	Cast Iron Bearers-Mk. P4			
2	Expansion Bolts ¾φ × 0'-10" (for P4 in pa			

BRIDGE #112
OVER RED CLAY CREEK
LEVY COURT
New Castle County, Del.

~~RIVETS~~
~~HOLES~~
PAINT 1-Coat Dutch Boy Red Lead & Oil (Special)

6-1

RECORD OF PRINTS

2	APP	9/24

BELMONT IRON WORKS
PHILA., PA.

MADE BY W.H.F. DATE 9-24-29
CHECKED BY CMB DATE 9-25-29
REVISED