I N D E X

		Dwg. No.
ANCHORING		
Continuous Welded Rail	Sheet 1	C-1352.2
Continuous Welded Rail	Sheet 2	C-1352.0
39 ft. rail		C-1350.2
78 ft. rail		C-1351.0
BAR JOINT		
112 lb. - 36" long		C-1402.0
115 lb. - 36" Long		C-1401.1
132 lb. - 36" long		C-1400.1
BOLT, TRACK	Sheet 1	C-1600.3
Bolt Details	Sheet 2	C-1600.1
Bolt Details	Sheet 3	C-1600.0
Bolt Details	Sheet 4	C-1600.0
CLEARANCE POINTS		
Track		C-2508.0
Statutory		C-2509.2
CLOSURE RAIL		
No. 9 Turnout	Sheet 2	C-2061.0
No. 11 Turnout	Sheet 2	C-2055.0
No. 15 Turnout	Sheet 2	C-2071.1
No. 20 Turnout	Sheet 2	C-2051.0
No. 24 Equilateral	Sheet 2	C-2068.0
CROSSING, PUBLIC ROAD		
Paved		C-2251.1
Plank		C-2253.3
Timber		C-2252.3
CROSS-OVERS No. 20		C-1010.2
DERAIL, SWITCH POINT		C-1706.1
EXTENSION PLATES		
Electric Switch Offset	Sheet 1	C-1710.1
Spring Switch Offset	Sheet 2	C-1710.0
FENCE		
Gate		C-2505.2
Right-of-Way		C-2504.3
Posts (Gate, End and Corner)		C-2510.1

		Dwg. No.
FROGS		
112 lb. No. 7 (Tampese Type) SG		C-1823.1
112 lb. No. 9 (Tampese Type) SG		C-1821.2
112 lb. No. 9 Railbound Manganese		C-1822.3
112 lb. No. 11 Railbound Manganese		C-1820.2
115 lb. No. 7 Solid Manganese		C-1808.2
115 lb. No. 7 (Tampese Type) SG		C-1817.1
115 lb. No. 7 Railbound Manganese		C-1811.2
115 lb. No. 9 Solid Manganese		C-1803.3
115 lb. No. 9 Self-Guarded		C-1800.3
115 lb. No. 9 (Tampese Type) SG		C-1816.2
115 lb. No. 9 Railbound Manganese		C-1801.4
115 lb. No. 11 (Tampese Type) SG		C-1825.1
115 lb. No. 11 Railbound Manganese		C-1806.5
115 lb. No. 15 Railbound Manganese		C-1827.3
115 lb. No. 20 Railbound Manganese		C-1809.3
132 lb. No. 7 Solid Manganese		C-1810.1
132 lb. No. 7 (Tampese Type) SG		C-1819.1
132 lb. No. 7 Self-Guarded		C-1815.1
132 lb. No. 7 Railbound Manganese		C-1812.2
132 lb. No. 9 Solid Manganese		C-1807.3
132 lb. No. 9 (Tampese Type) SG		C-1818.2
132 lb. No. 9 Self-Guarded		C-1804.3
132 lb. No. 9 Railbound Manganese		C-1802.4
132 lb. No. 11 (Tampese Type) SG		C-1824.1
132 lb. No. 11 Railbound Manganese		C-1805.5
132 lb. No. 15 Railbound Manganese		C-1828.3
132 lb. No. 20 Railbound Manganese		C-1813.3
JOINT		
Compromise	Sheet 1	C-1404.1
Compromise Details	Sheet B-1	C-1404.4
Compromise Details	Sheet B-2	C-1404.1
Compromise Details	Sheet G-2	C-1404.1
Compromise Details	Sheet G-3	C-1404.1
Compromise Details	Sheet N-2	C-1404.1
Compromise Details	Sheet N-3	C-1404.1
Compromise Details	Sheet N-4	C-1404.1
Compromise Details	Sheet Q-2	C-1404.2
Compromise Details	Sheet Q-3	C-1404.1
Compromise Details	Sheet Q-4	C-1404.3
Expansion		C-6019.1

NOTE: The digit following the decimal point of the drawing number indicates the revision number. Thus, the digit .1 in Drawing C-1000.1 indicates the drawing has been revised once and reissued.

November, 1981

esengtrdl 5

I N D E X

		Dwg. No.
LOCK, SWITCH POINT		C-2158.2
NOTE: See Special Instructions In Appendix "A" P. 3		
MOTOR CAR SET-OFF		
Double Track		C-2255.4
Single Track		C-2254.5
With Signal Berms		C-2256.2
PLATES		
115 lb. 7-3/4" x 14"		C-1200.1
132 lb. 7-3/4" x 14"		C-1203.1
RAIL		
R. E. 115 lb.		C-1301.1
R. E. 132 lb.		C-1300.0
R. E. 112 lb.		C-1302.0
Sections 112 lb. to 136 lb.	Sheet 1	C-1304.2
Sections 90 lb. to 110 lb.	Sheet 2	C-1304.0
Sections 77-1/2 lb. to 80 lb.	Sheet 3	C-1304.0
Sections 66 to 75 lb.	Sheet 4	C-1304.0
RAIL, GUARD		
85 through 100 lb. EPG-2		C-2003.2 2000.1
115 and 132 lb. 13 ft. EPG-2		C-2000.3
115 and 132 lb. 15 ft. EPG-2		C-2004.2
RAIL, INNER GUARD		C-2010.0
ROADBED SECTIONS		
Main Line	Sheet 1	C-1000.2
Main Line	Sheet 2	C-1000.0
Industry		C-1001.0
Light Traffic		C-1003.0
ROD, GAGE		
Non-Insulated		C-2500.0
Insulated		C-2501.0
ROD, SWITCH STAND CONNECTING		C-2156.3
SHIMS AND BRACES		
Track		C-1050.3

		Dwg. No.
SIGNS		
NOTE: See Special Instructions in Appendix "A", P. 2		
Highway		
Advance Warning	Sign No. 65	C-3065.1
Highway Crossing	Sign No. 61	C-3061.5
Highway Crossing for Canada	Sign No. 62	C-3062.5
Highway Crossing For Wisconsin	Sign No. 63	C-3063.5
Private Crossing	Sign No. 66	C-3066.2
Private Crossing for California	Sign No. 67	C-3067.1
Stop	Sign No. 64	C-3064.1
Location		
Milepost	Sign No. 101	C-3101.2
Milepost End Multiple Track	Sign No. 102	C-3102.1
Post		
Metal Nos. 1, 2, and 3		C-3001.0
Wood Nos. 13, 14, and 15		C-3002.1
Property		
No Trepassing	Sign No. 81	C-3081.1
Station	Sign No. 82	C-3082.3
Westward Siding	Sign No. 83	C-3083.1
Safety		
Approved List (For Sign No. 41)		C-3042.0
Hazard	Sign No. 41	C-3041.1
Danger	Sign No. 45	C-3045.1
Men Working	Sign No. 47	C-3047.1
No Clearance	Sign No. 44	C-3044.1
Restricted Clearance (Bridges)	Sign No. 43	C-3043.1
Warning Underground Cable	Sign No. 46	C-3046.1
Maintenance of Way		
Curve Tag	Sign No. 124	C-3124.2
Flanger	Sign No. 121	C-3121.2
Maintenance of Way Flag	Sign No. 123	C-3123.4
Ownership and Maintenance	Sign No. 125	C-3125.1
Tunnel	Sign No. 122	C-3122.1

I N D E X

	Dwg. No.	
SIGNS		
Train Control		
Advance Warning Speed	Sign No. 6	C-3006.4
Advance Warning Speed	Sign No. 8	C-3008.5
Crossing Signal Re-Start	Sign No. 34	C-3034.1
Crossing Signal Start	Sign No. 35	C-3035.1
Crossing Whistle	Sign No. 23	C-3023.3
Derail	Sign No. 28	C-3028.2
Draw Span One Mile	Sign No. 30	C-3030.2
End Automatic Block	Sign No. 24	C-3024.3
End Double Track	Sign No. 18	C-3018.2
End CTC	Sign No. 26	C-3026.3
Fouling Point	Sign No. 31	C-3031.3
Junction 800 Ft.	Sign No. 12	C-3012.2
Junction one mile	Sign No. 11	C-3011.2
No Engine Beyond This Point	Sign No. 19	C-3019.2
One Mile Switch	Sign No. 25	C-3025.1
Portable Train Control	Sign No. 10	C-3010.4
R. R. Crossing 1 Mile Protected "M:	Sign No. 13	C-3013.2
R. R. Crossing 800 Ft. Not Protected "U"	Sign No. 14	C-3014.2
Resume Speed	Sign No. 33	C-3033.1
Signal Clearing Section	Sign No. 36	C-3036.1
Signal Overlap	Sign No. 29	C-3029.2
Speed Sign	Sign No. 7	C-3007.5
Speed Sign F. & P.	Sign No. 9	C-3009.4
Spring Switch	Sign No. 20	C-3020.2
Stop "RRX" "RRJ" "RRDS"	Sign No. 22	C-3022.2
Switching Limits	Sign No. 17	C-3017.2
Test Mile	Sign No. 21	C-3021.2
Trainmen Warning	Sign No. 27	C-3027.2
Verification Point	Sign No. 32	C-3027.2
Yard Limit	Sign No. 16	C-3016.2
Yard Limit One Mile	Sign No. 15	C-3015.2
SIGN SPECIFICATIONS	Sheet 1	C-3000.3
	Sheet 2	C-3000.2
SPIKE, TRACK		C-1650.2

		Dwg. No.
STAKE, ENGINEER'S		C-1051.1
STANDS, SWITCH		
NOTE: See Special Instructions Appendix "A", Page 1		
Bethlehem No. 122		C-2155.0
Connecting Rods		C-2156.2
Hayes (Derail)		C-2157.3
Location of Switch Stands		C-2154.1
Pettibone Automatic		C-2151.2
Racor 36D Parallel Throw		C-2153.2
Racor Style 40		C-2152.2
Racor High Target No. 112G		C-2150.2
Target, Staff No. 1	Sheet 1	C-2160.1
Target, Staff No. 2	Sheet 2	C-2160.0
Target, Staff No. 3	Sheet 3	C-2160.0
Targets		C-2159.2
Plan & Elevation	Sheet 1	C-1709.2
Rods and Blocks	Sheet 2	C-1709.2
Plates	Sheet 3	C-1709.1
16"6" 112 lb. Straight Undercut		
Plan and Elevation	Sheet 1	C-1707.3
Rods and Blocks	Sheet 2	C-1707.1
Plates	Sheet 3	C-1707.3
19'6" 112 lb. Curved		
Plan and Elevation	Sheet 1	C-1708.3
Rods and Blocks	Sheet 2	C-1708.2
Plates	Sheet 3	C-1708.2
Electric	Sheet 5	C-1708.1
Gage Plates	Sheet 6	C-1708.2
16'6" 115 lb. Straight Knife Point		
Plan and Elevation	Sheet 1	C-1711.2
Roads and Blocks	Sheet 2	C-1711.1
Plates	Sheet 3	C-1711.1
Material List		
Insulated	Sheet 4	C-1711.0
Non-Insulated	Sheet 5	C-1711.0

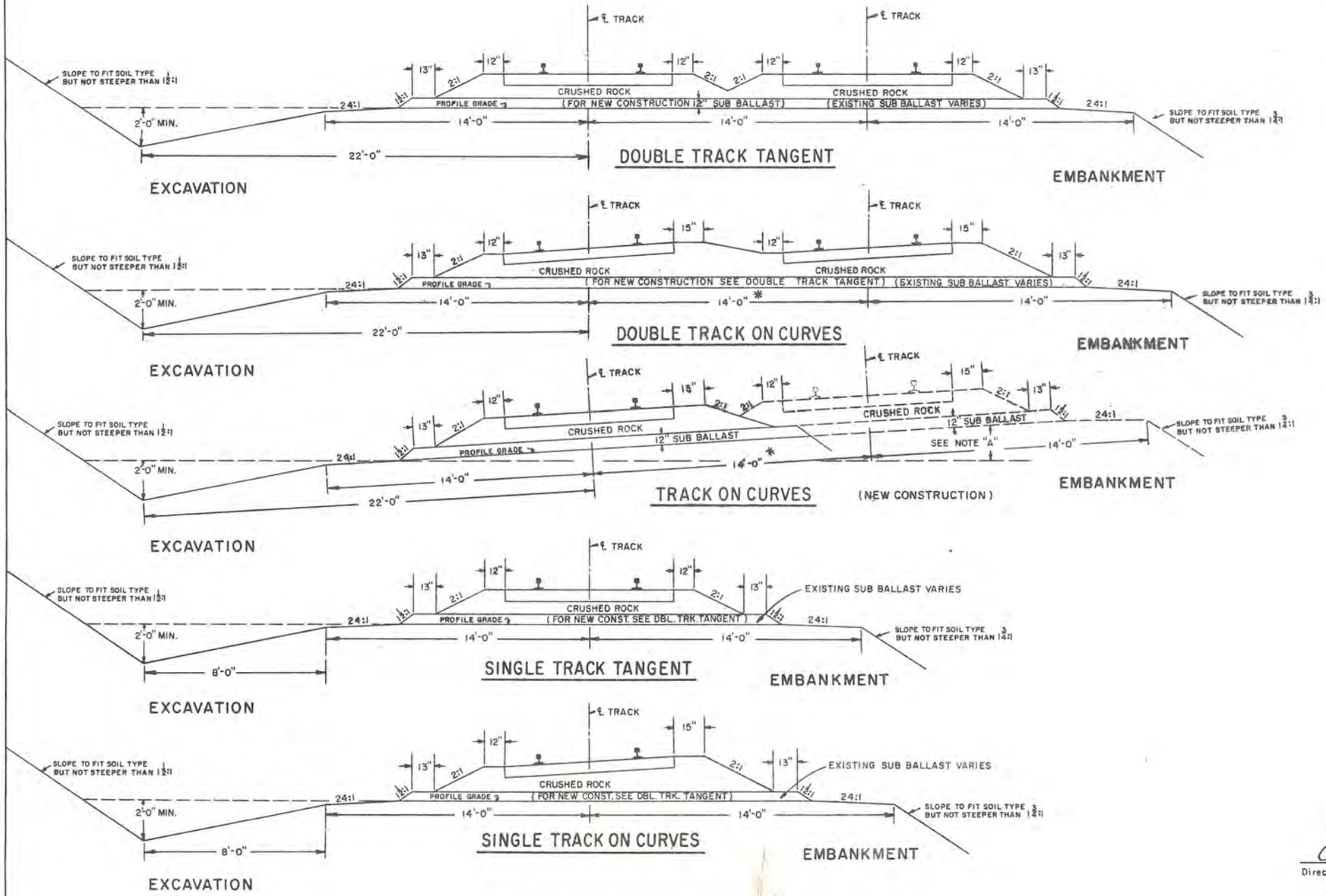
I N D E X

SWITCHES (Cont'd.)			Dwg. No.
16'6" 115 lb.	Straight Undercut		
	Plan & Elevation	Sheet 1	C-1700.4
	Rods and Blocks	Sheet 2	C-1700.2
	Plates	Sheet 3	C-1700.4
	Manganese Tip	Sheet 4	C-1700.0
	Electric	Sheet 5	C-1700.3
	Gage Plates	Sheet 6	C-1700.3
	Material List		
	Electric	Sheet 7	C-1700.0
	Insulated	Sheet 8	C-1700.0
19'6" 115 lb.	Curved		
	Plan & Elevation	Sheet 1	C-1701.5
	Rods and Blocks	Sheet 2	C-1701.3
	Plates	Sheet 3	C-1701.3
	Manganese Tip	Sheet 4	C-1701.0
	Electric	Sheet 5	C-1701.4
	Gage Plates	Sheet 6	C-1701.4
	Spring	Sheet 7	C-1701.0
	Material List		
	Electric	Sheet 8	C-1701.0
	Insulated	Sheet 9	C-1701.0
30' 115 lb.	Curved		
	Plan & Elevation	Sheet 1	C-1702.7
	Rods and Blocks	Sheet 2	C-1702.5
	Plates	Sheet 3	C-1702.7
	Manganese Tip	Sheet 4	C-1702.0
	Plates	Sheet 5	C-1702.1
	Material List		
	Electric	Sheet 6	C-1702.0
16'6" 132 lb.	Straight		
	Plan & Elevation	Sheet 1	C-1703.4
	Rods and Blocks	Sheet 2	C-1703.1
	Plates	Sheet 3	C-1703.3
	Manganese Tip	Sheet 4	C-1703.0
	Electric	Sheet 5	C-1703.3
	Gage Plates	Sheet 6	C-1703.3
	Material List		
	Electric	Sheet 7	C-1703.0
	Insulated	Sheet 8	C-1703.0

SWITCHES (Cont'd.)			Dwg. No.
19'6" 132 lb.	Curved		
	Plan & Elevation	Sheet 1	C-1704.5
	Rods & Blocks	Sheet 2	C-1704.3
	Plates	Sheet 3	C-1704.5
	Manganese Tip	Sheet 4	C-1704.0
	Electric	Sheet 5	C-1704.4
	Gage Plates	Sheet 6	C-1704.4
	Spring	Sheet 7	C-1704.1
	Material List		
	Electric	Sheet 8	C-1704.1
	Spring	Sheet 9	C-1704.1
	Insulated	Sheet 10	C-1704.1
30' 132 lb.	Curved		
	Plan & Elevation	Sheet 1	C-1705.8
	Rods & Blocks	Sheet 2	C-1705.4
	Plates	Sheet 3	C-1705.8
	Manganese Tip	Sheet 4	C-1705.0
	Plates	Sheet 5	C-1705.1
	Material List		
	Electric	Sheet 6	C-1705.1

I N D E X

		Dwg. No.
TIE SPACING		C-1005.1
TIE LAYOUT CROSS-OVERS		
14' Centers	Sheet 1	C-1006.2
15' Centers	Sheet 2	C-1006.0
TOOLS, TRACK		
Index and Plans rear of book		
TURNOUTS		
No. 7 - 112 lb. Self-Guarded		C-2064.2
No. 7 - 112 lb. Railbound Manganese		C-2065.4
No. 9 - 112 lb. Railbound Manganese		C-2067.4
No. 9 - 112 lb. Self-Guarded		C-2063.4
No. 11 - 112 lb. Railbound Manganese		C-2062.5
No. 7 - 115 lb. Self-Guarded		C-2057.3
No. 7 - 115 lb. Railbound Manganese Frog		C-2056.5
No. 9 - 115 lb. Self-Guarded		C-2052.6
No. 9 - 115 lb. Railbound Manganese Frog		C-2053.6
No. 11 - 115 lb. Railbound Manganese Frog		C-2054.7
No. 15 - 115 lb. Railbound Manganese Frog		C-2070.5
No. 20 - 115 lb. Railbound Manganese Frog		C-2050.9
No. 7 - 132 lb. Self-Guarded Frog		C-2059.2
No. 7 - 132 lb. Railbound Manganese Frog		C-2060.4
No. 9 - 132 lb. Self-Guarded Frog		C-2058.5
No. 9 - 132 lb. Railbound Manganese Frog		C-2061.5
No. 11 - 132 lb. Railbound Manganese Frog		C-2055.7
No. 15 - 132 lb. Railbound Manganese Frog		C-2071.5
No. 20 - 132 lb. Railbound Manganese Frog		C-2051.9
No. 24 - 132 lb. Equilateral		C-2068.5
WASHER, SPRING		C-1601.0



NOTE:

M/L TRACK CENTERS IN STATE OF OREGON SHALL BE 15'-0"

CTC AND COAL TRAIN SIDINGS SHALL BE CONSTRUCTED TO MAINLINE ROADBED SECTION STANDARDS.

FOR NEW CONSTRUCTION PROVIDE 12" SUB BALLAST.

FOR MAINTENANCE PROVIDE NEW BALLAST LIFT AS DIRECTED.

* INCREASE TO 15'-0" ON CURVES OVER 6 DEGREES.

NOTE "A": GRADING TO CONFORM TO SUPER ELEVATION OF CURVE.

CONSTRUCT PASSING TRACKS TO SAME SECTION AS DOUBLE TRACK EXCEPT TOP OF RAIL TO BE 6" LOWER AND BALLAST MATERIAL TO BE OF LESSER QUALITY.

CUBIC YARDS PER MILE OF TRACK		
LIFT	SINGLE TRACK	DOUBLE TRACK 14' CENTERS
4"	1800	3550
6"	2250	4500
8"	2750	5450
10"	3250	6400
12"	3800	7400

This plan supersedes plan Nº C-1000.1

BURLINGTON NORTHERN INC
STANDARD PLAN

MAINLINE ROADBED SECTIONS

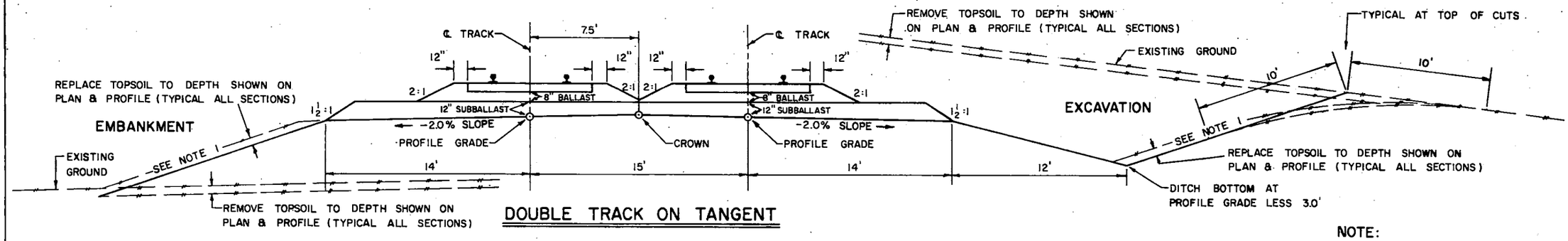
ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1973

Recommended: F. A. Kempe, Director Track Engineering

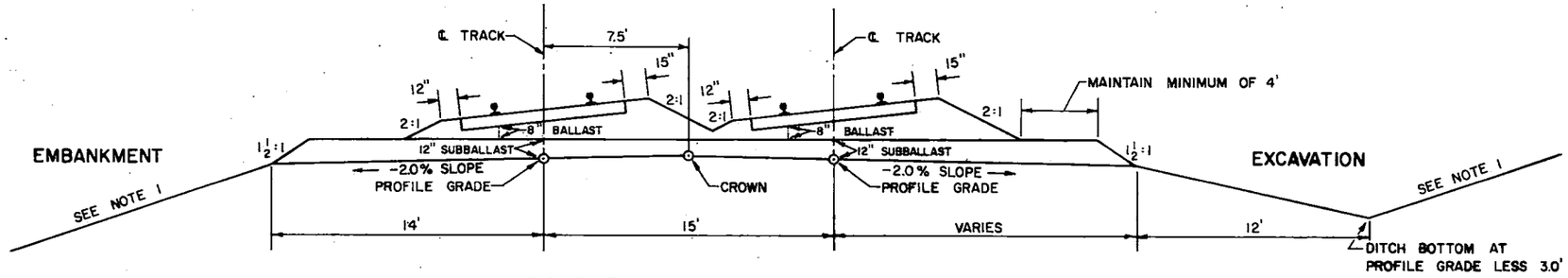
Approved: R. M. Lorentzen, Vice President, Operations

B. H. Anderson, Asst. Vice President Engineering

Dwg. Nº C-1000.2



DOUBLE TRACK ON TANGENT

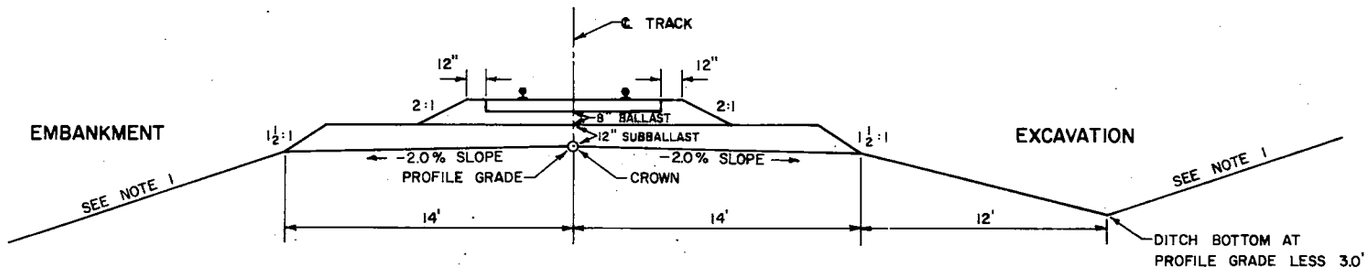


DOUBLE TRACK ON CURVE

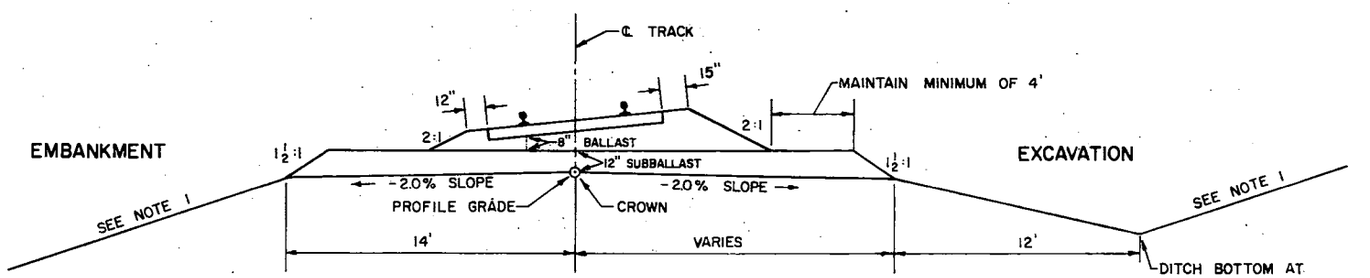
NOTE:

1. FILL AND CUT SLOPES SHALL BE AS INDICATED ON PLAN & PROFILE.
2. WHERE DOUBLE TRACK CROSSES A ROADWAY, ADJUST BALLAST SECTION TO PROVIDE UNIFORM ROADWAY PROFILE.

CUBIC YARDS PER MILE OF TRACK		
TANGENT	8" BALLAST	12" SUB BALLAST
SINGLE TRACK	2750	5775
DOUBLE TRACK	5500	8475



SINGLE TRACK ON TANGENT



SINGLE TRACK ON CURVE

BURLINGTON NORTHERN INC.
STANDARD PLAN

MAINLINE ROADBED SECTIONS

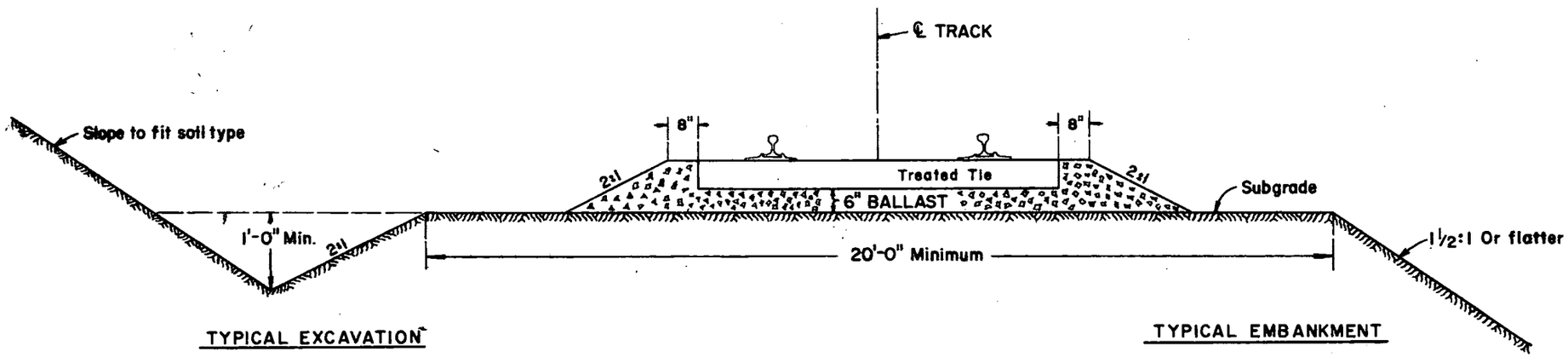
(NEW CONSTRUCTION)

ENGINEERING DIVISION, ST. PAUL, MINN. SEPT., 1978

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: Sr. Vice President Operations

Dwg. No. C-1000.0 Sht. 2



TYPICAL EXCAVATION

Slope ditch longitudinally to drain

TYPICAL EMBANKMENT

NOTE:
Roadbed section for spur tracks serving more than one industry or over 1500 ft. long is to be referred to Assistant Vice President Engineering for determination.

BURLINGTON NORTHERN INC.
STANDARD PLAN

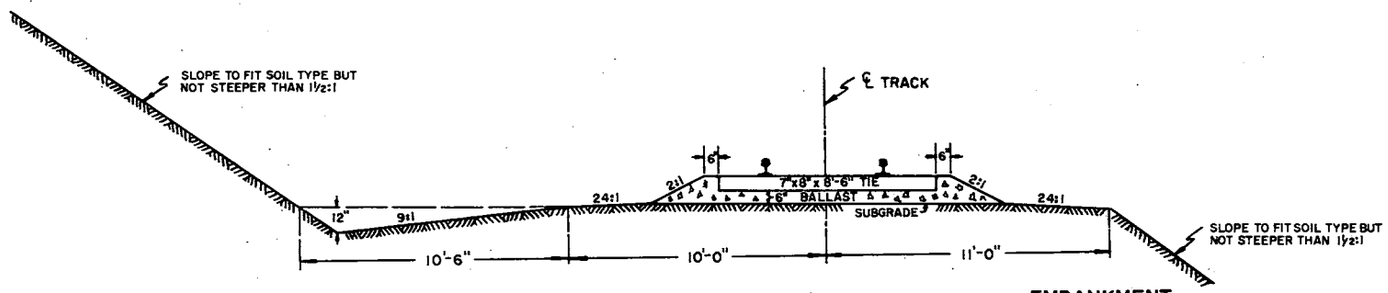
INDUSTRY SPUR
ROADBED SECTION

ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1970.

Recommended
B.H. Anderson
Asst. Vice President Engineering

Approved
N.W. Hountras
Vice President, Operations

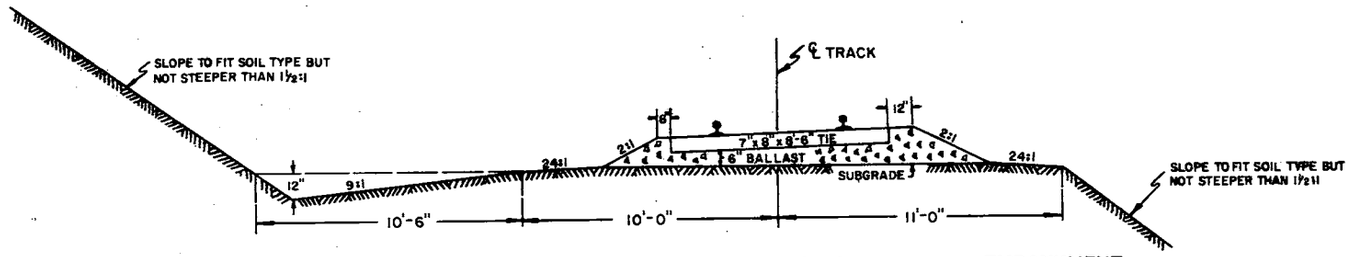
Dwg. Nº C 1001.0



EXCAVATION

TANGENT TRACK

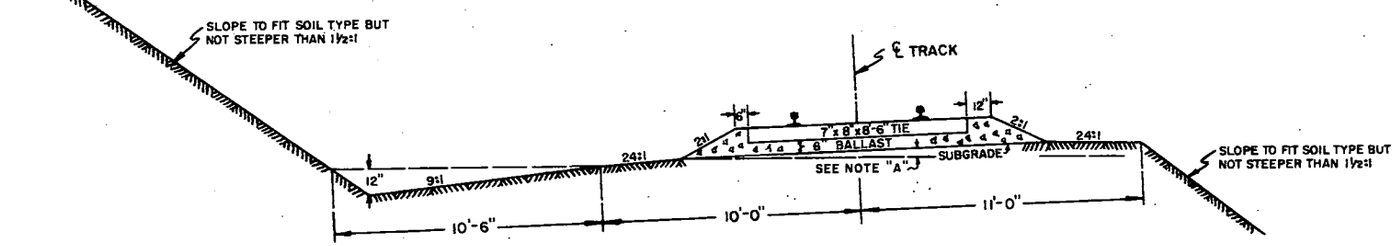
EMBANKMENT



EXCAVATION

CURVED TRACK

EMBANKMENT



EXCAVATION

CURVED TRACK
(NEW CONSTRUCTION)

EMBANKMENT

BALLAST PER MILE TANGENT TRACK

6" LIFT	2,435 CU. YARDS

NOTE:
6" GRANULAR SUBBALLAST AS REQUIRED PER SUBGRADE CONDITION.

NOTE "A" GRADING TO CONFORM TO SUPER ELEVATION ON CURVES.

BURLINGTON NORTHERN INC.
STANDARD PLAN

LIGHT TRAFFIC LINES
ROADBED SECTION

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1971.

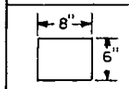
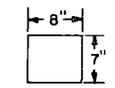
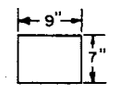
Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. Nº C-1003.0

NUMBER OF TIES FOR VARIOUS TYPE TRACKS

TYPE OF TRACK	CLASS OF LINE	NUMBER OF TIES PER RAIL		
		39 FOOT RAIL	33 FOOT RAIL	30 FOOT RAIL
MAIN TRACKS	A	23	19	18
	B	23	19	18
	C	22	18	16
	D	21	18	16
IMPORTANT SIDINGS AND YARD TRACKS	A	22	18	16
	B	22	18	16
	C	21	18	16
	D	21	18	16
OTHER TRACKS	A	19	16	14
	B	19	16	14
	C	19	16	14
	D	19	16	14

GRADE OF CROSS TIES				
GRADE	SAWED			
		LENGTH	BD. FT.	CU.FT
3		8'-6"	34	2.83
4		8'-6"	$39\frac{2}{3}$	3.31
5		8'-6"	$44\frac{5}{8}$	3.72

NOTE

THE ASSIGNMENT OF TIE SIZE SHALL BE AS DETERMINED BY THE ASST. VICE PRESIDENT ENGINEERING. EXISTING TIE SPACING IN TRACKS SHALL NOT BE CHANGED TO CONFORM TO THIS STANDARD EXCEPT IN OUT OF FACE REBALLASTING PROGRAMS. CLASS OF LINE AS SHOWN ON CURRENT B.N. LINE CLASSIFICATION MAP ISSUED AS PART OF ENGINEERING DIVISION CIRCULAR MW-6.

BURLINGTON NORTHERN INC.
STANDARD PLAN

TIE SPACING

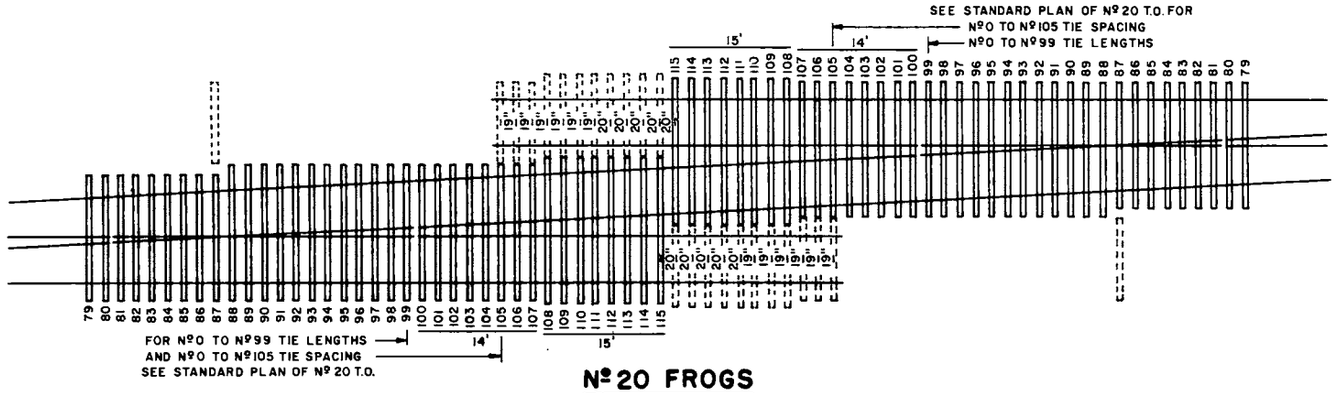
ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1973

Recommended — Asst. Vice President Engineering

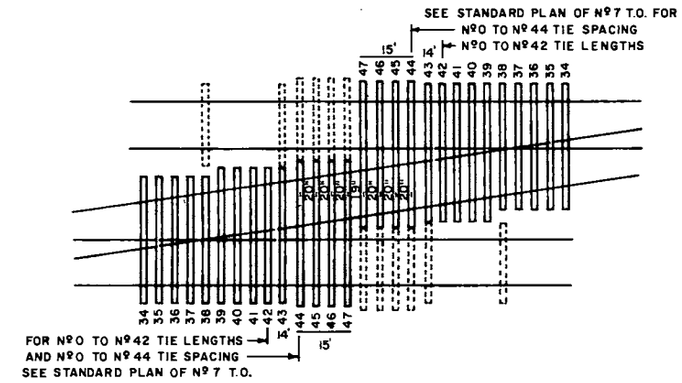
Approved — Vice President Operations

Revised 1-81
THIS PLAN SUPERSEDES PLAN NO. C-1005.0

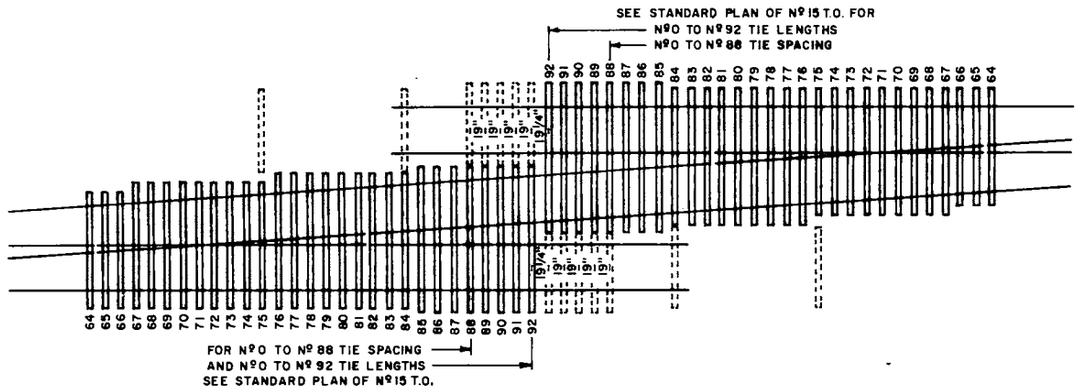
Dwg. No C-1005.1



Nº 20 FROGS



Nº 7 FROGS



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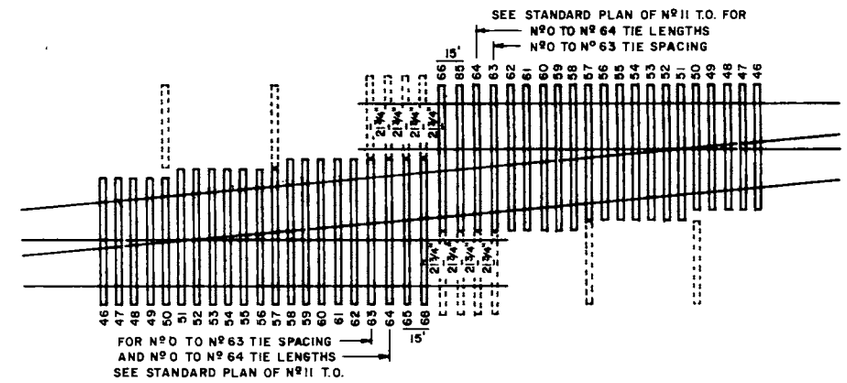
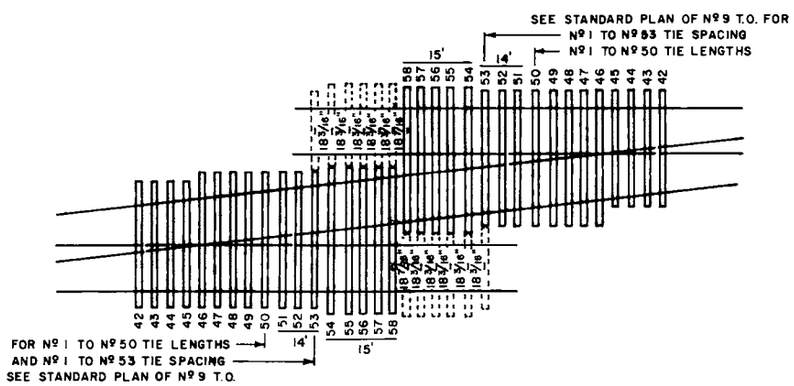


Nº 11 FROGS



Nº 9 FROGS

NOTE:

STANDARD CROSS TIES NOT INCLUDED IN BILL OF TIES.

14' TRACK CENTERS.

ALL FROGS ARE RAILBOUND MANGANESE.

BILL OF TIES											
CROSS-OVER FROGS	LENGTH AND NUMBER OF TIES									TOTAL NO. OF TIES	FEET B.M.
	8"x 10"		7" x 9"								
	9'	14'	9'	10'	11'	12'	13'	14'	15'		
Nº 7	0	0	22	18	14	10	10	10	12	96	5786
Nº 9	0	0	18	26	18	12	12	16	14	116	7109
Nº 11	0	0	28	20	20	16	14	14	22	134	8253
Nº 15	2	4	44	34	22	28	18	18	16	186	11203
Nº 20	2	4	40	40	34	30	26	40	16	232	14311

BURLINGTON NORTHERN INC.

STANDARD PLAN

TIE LAYOUTS 14' CENTERS FOR MAIN LINE CROSS-OVERS

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1976

Recommended

B. H. Anderson

Asst. Vice President Engineering

Approved

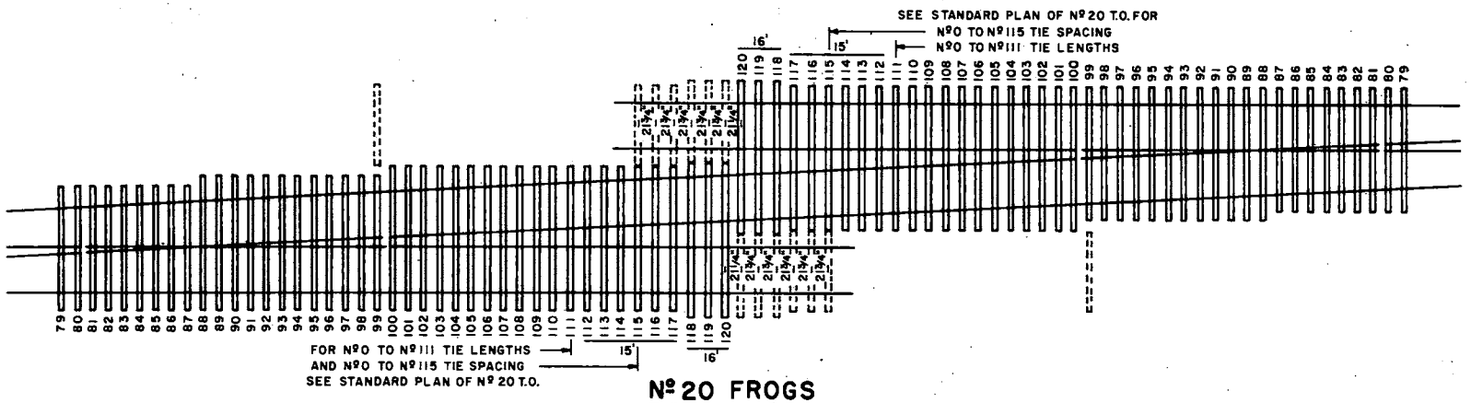
J. A. Hartwig

Vice President, Operations

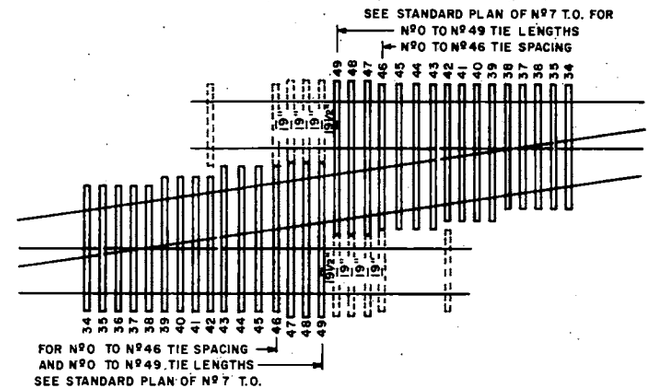
Dwg. Nº C-1006.2 Sheet 1

Revised 6-78, 1-80

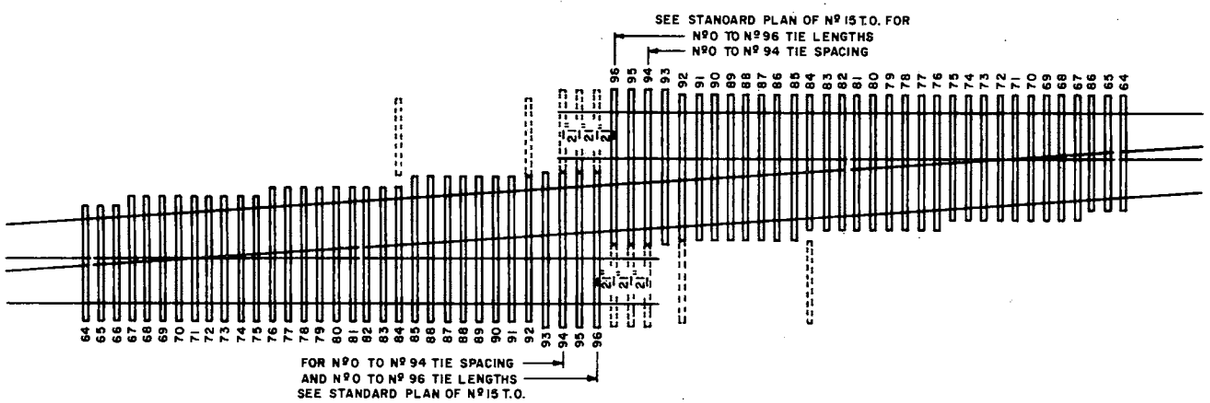
THIS PLAN SUPERSEDES PLAN NO. C-1006.1



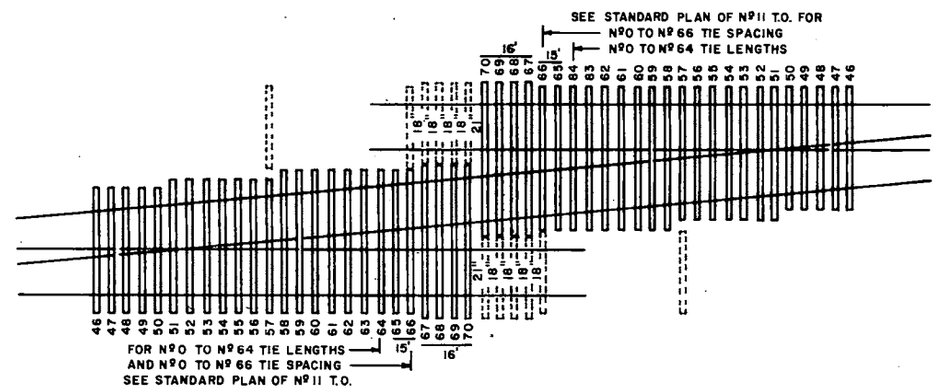
Nº 20 FROGS



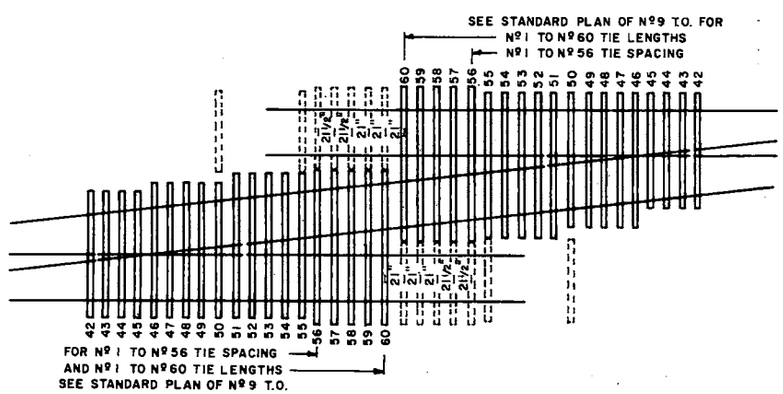
Nº7 FROGS



Nº15 FROGS



Nº11 FROGS



Nº9 FROGS

NOTE:

STANDARD CROSS TIES NOT INCLUDED IN BILL OF TIES.

15' TRACK CENTERS.

ALL FROGS ARE RAILBOUND MANGANESE.

BILL OF TIES												
CROSS-OVER FROGS	LENGTH AND NUMBER OF TIES										TOTAL NO. OF TIES	FEET B.M.
	8"x10"		7" x 9"									
	9'	14'	9'	10'	11'	12'	13'	14'	15'	16'		
Nº 7	0	0	22	18	14	10	10	8	12	6	100	6143
Nº 9	0	0	18	26	18	12	12	10	14	10	120	7508
Nº 11	0	0	28	20	20	16	14	14	22	8	142	8925
Nº 15	2	4	44	34	22	28	18	18	16	8	194	11875
Nº 20	2	4	40	40	34	30	26	24	36	6	242	15214

BURLINGTON NORTHERN INC.

STANDARD PLAN

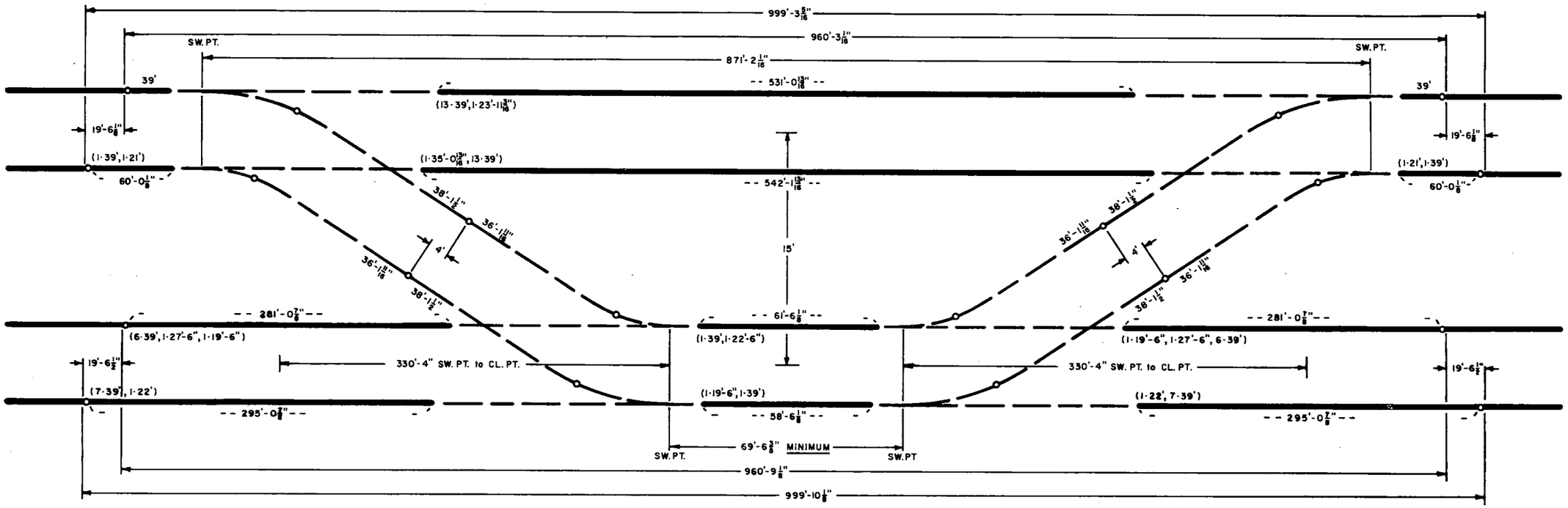
TIE LAYOUTS 15' CENTERS FOR MAIN LINE CROSS-OVERS

ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1978

Recommended: B. B. Cochran — Asst. Vice President Engineering

Approved: J. H. Hartog — Sr. Vice President, Operations

Dwg. Nº C-1006.0 Sheet 2



LEGEND

- WELDED RAIL
- BOLTED RAIL
- STANDARD RAIL JT. 1/8" GAP
- INSULATED RAIL JT. 3/8" GAP
- (1-39', 1-21') QUANTITY, LENGTH & SEQUENCE OF BOLTED RAIL.

BURLINGTON NORTHERN INC.

STANDARD PLAN

TYPICAL LAYOUT DOUBLE Nº 20 CROSSOVERS FOR USE IN

115 - 132 LB. WELDED AND BOLTED RAIL TERRITORY

ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1978

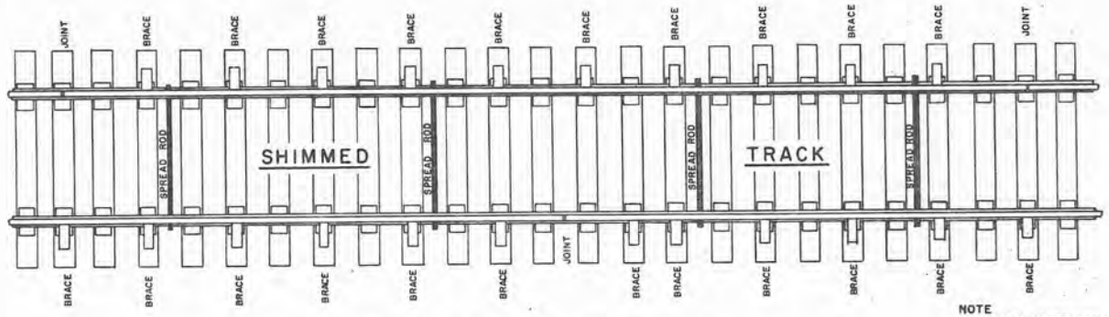
Recommended — Asst. Vice President Engineering

Approved — Sr. Vice President, Operations

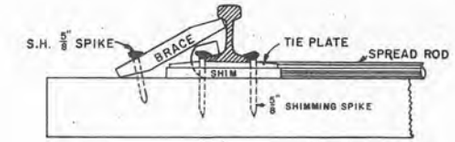
Dwg. Nº C-1010.2

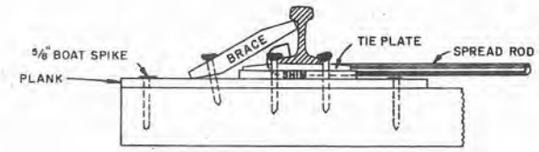
Revised 11-78, 10-80

THIS PLAN SUPERSEDES PLAN NO. C-1010.1



TYPICAL PANEL - MAIN LINE ON TANGENT



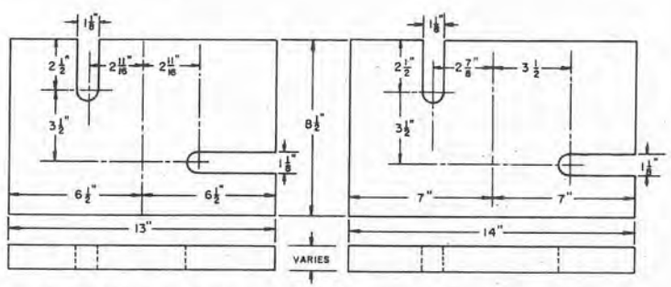


NOTE
1. WHEN NECESSARY TO SHIM MORE THAN 2" OR 4" USE 2"X8"X3'-0" OR TWO 2"X8"X3'-0" PLANKS. MAKE PLANK FLUSH WITH END OF TIE AND FASTEN WITH 4-8" SPIKES. PLANKS CAN BE MADE FROM PINE, HEMLOCK OR FIR. BEFORE SPIKING THE RAIL OR SHIM BRACES, PLANKS MUST BE BORED WITH 5/8" HOLES.
2. DO NOT USE TIE PLATES FOR SHIM BRACES.

APPLICATION of BRACES and SPREAD RODS				
TRACK	MAIN LINE		BRANCH LINE	
	ON TANGENT	ON CURVE	ON TANGENT	ON CURVE
BRACING ON TRACK SHIMMED 1/2" OR LESS	NONE	BRACE EVERY 3RD TIE	NONE	BRACE EVERY 3RD TIE
BRACING ON TRACK SHIMMED 1/2" TO 1"	BRACE EVERY 3RD TIE	BRACE EVERY OTHER TIE	BRACE EVERY 3RD TIE	BRACE EVERY OTHER TIE
BRACING ON TRACK SHIMMED 1" TO 2"	BRACE EVERY OTHER TIE	BRACE EVERY TIE	BRACE EVERY OTHER TIE	BRACE EVERY TIE
SPREAD RODS PER PANEL OF SHIMMED TRACK	4 TO EACH PANEL 1 AT EACH SHORT QUARTER 1 " " LONG "	4 TO EACH PANEL 1 AT EACH SHORT QUARTER 1 " " LONG "	3 TO EACH PANEL 1 AT CENTER OF PANEL 1 " EACH QUARTER "	3 TO EACH PANEL 1 AT CENTER OF PANEL 1 " EACH QUARTER "

GENERAL INSTRUCTIONS

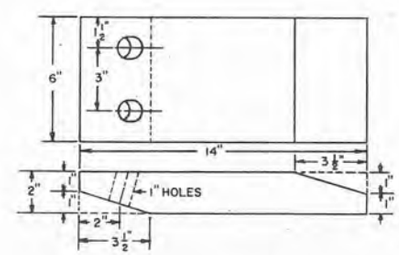
IN SHIMMING TRACK, FIRST ACCURATELY SPIKE THE "LINE" RAIL IN PLACE, THUS RESTORING TRUE ALINGNMENT ON "LINE" SIDE OF TRACK AVOID SHORT KINKS IN LINE. NEXT, PLACE GAGE RAIL TO NORMAL GAGE OF TRACK. A GAGE LESS THAN OR EXCEEDING NORMAL GAGE THROWS GAGE RAIL OUT OF LINE. ON CURVES, THE OUTSIDE RAIL SHALL BE PLACED IN LINE IN PREFERENCE TO "LINE" RAIL. A TRACK LEVEL SHALL ALWAYS BE USED WHEN SHIMMING TRACK. RAILS ON TANGENT TRACK SHALL BE LEVEL AND RAILS ON CURVES SHALL BE GIVEN PROPER ELEVATION. SHIMS SHALL BE PLACED SQUARE WITH RAIL AND HELD IN PLACE WITH 5/8" SHIMMING SPIKES WHICH SHALL BE DRIVEN THRU SHIM. AVOID SLIDING SHIMS IN PLACE BETWEEN SPIKES. PLANKS SHALL BE USED IF SHIMMING EXCEEDS 2." PLANKS TO BE PLACED ON EVERY TIE. SPECIAL SHIMS OF PROPER LENGTH SHALL BE PROVIDED FOR SHIMMING UNDER FROGS, GUARD RAILS AND SWITCH POINTS. WHERE TIES ARE BADLY TIE CUT IT MAY BE NECESSARY TO USE SHIMS AND SPREAD RODS INSTEAD OF PLANKS TO AVOID HEAVY ADZING. TIE PLATES SHALL BE USED IN SHIMMED TRACK ON TOP OF SHIMS.
BRACES AND SPREAD RODS ARE TO BE USED WHEREVER RAIL IS LIFTED OFF TIES EXCEPT AT SPOTS WHERE ONLY A FEW TIES (4 OR LESS) ARE SHIMMED LESS THAN 1 INCH. RUN-OFFS SHALL BE SURFACED CAREFULLY AND BRACED SECURELY. RAIL SHALL HAVE BEARING OVER EACH TIE. BRACING SHALL EXTEND NOT LESS THAN 4 TIES IN ADVANCE OF SHIMS. BRACES SHALL BE PLACED SQUARE WITH RAIL, FITTING SNUGLY AND SHALL BE FASTENED TO TIE USING NOT LESS THAN 2 SPIKES TO BE DRIVEN HOME. S.H. 5/8" SPIKES TO BE USED WHEN AVAILABLE. TIES SHALL NOT BE NOTCHED OR OTHEWISE MUTILATED.



SHIMS FOR RAIL SECTIONS 56 LB. THRU 119 LB and 130 LB. Penn. Sec.

SHIMS FOR RAIL SECTIONS 129 LB. THRU 136 LB.

SHIMS TO BE MADE OF HARDWOOD.



SHIM BRACE

SHIM BRACES TO BE MADE OF Nº 1 COMMON OAK OR SECOND HAND CAR STOCK. "Straight Grained".

BURLINGTON NORTHERN INC.
STANDARD PLAN

TRACK SHIMS & BRACES

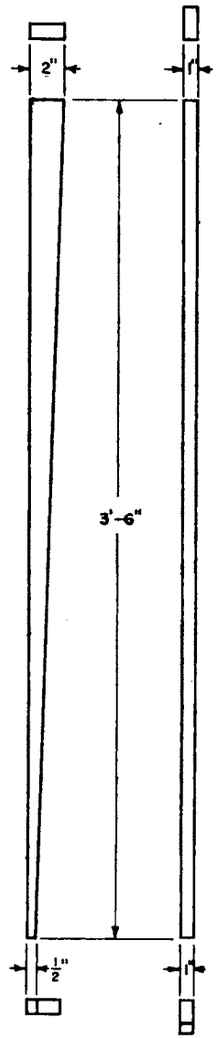
ENGINEERING DIVISION, ST. PAUL, MINN. SEPT., 1971

Recommended: B. H. Anderson — Asst. Vice President Engineering

Approved: J. C. Thington — Vice President, Operations

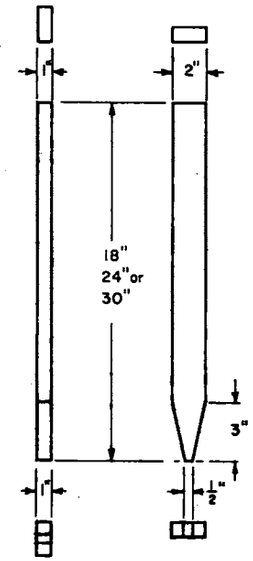
Dwg. Nº C-1050.3

Revised 7-72, 6-73, 4-75
THIS PLAN SUPERSEDES PLAN Nº C-1050.2



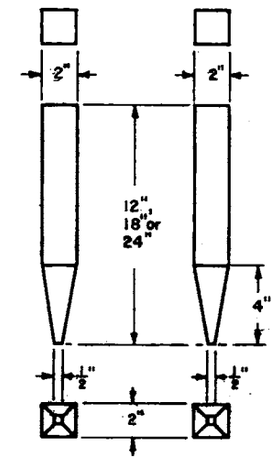
BALLAST STAKE

TO BE MADE OF STRAIGHT GRAINED OAK ROUGH CUT.



SLOPE STAKE

TO BE MADE OF PINE SURFACE TWO SIDES.



CENTER STAKE

TO BE MADE OF STRAIGHT GRAINED OAK ROUGH CUT.

NOTE:
STAKES ARE NOMINAL SIZE

BURLINGTON NORTHERN INC.
STANDARD PLAN

ENGINEER'S STAKES

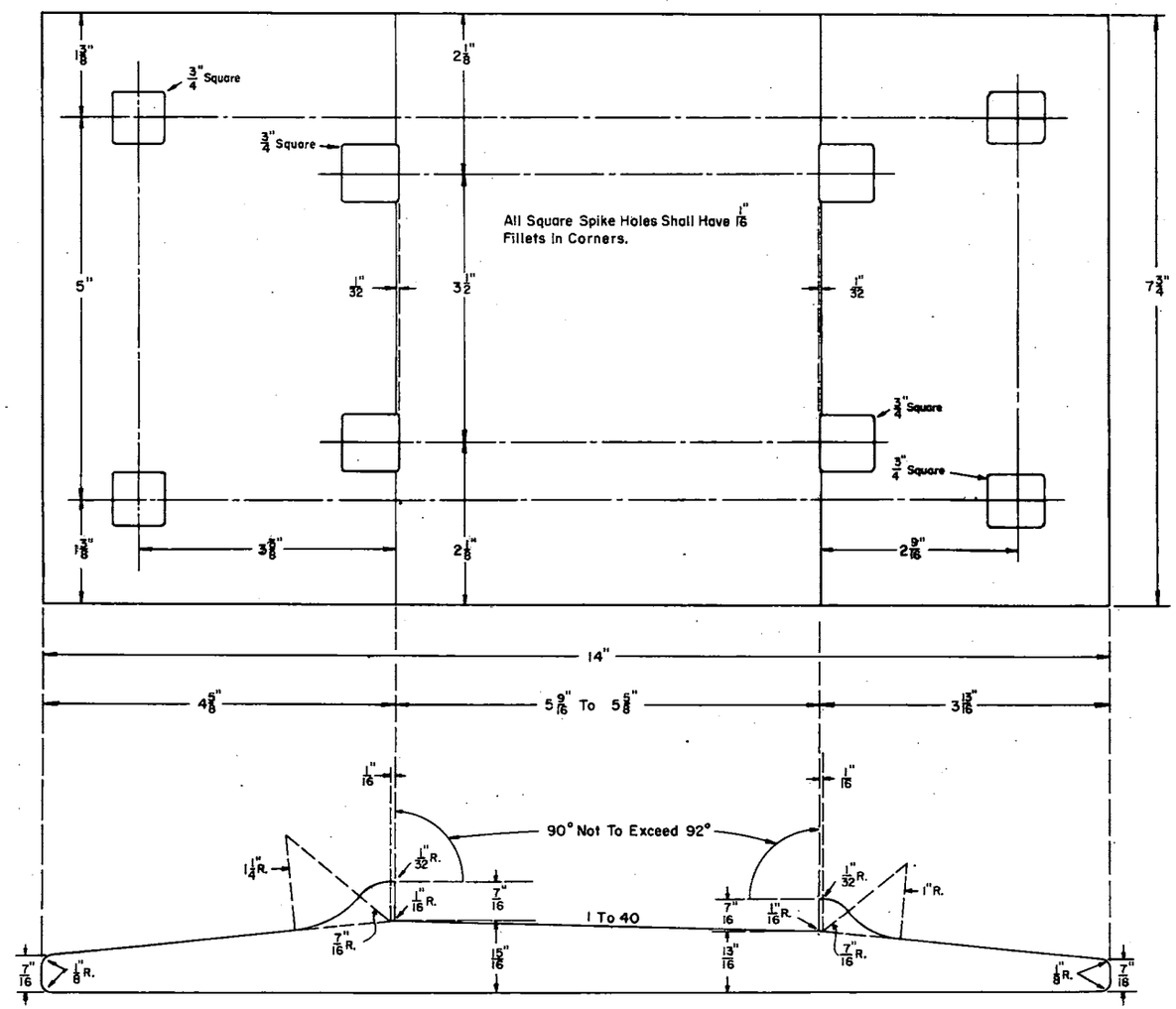
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1976

Recommended: B.H. Anderson, Asst. Vice President Engineering

Approved: J.R. Livingston, Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-1051.0

Dwg. No. C-1051.1



NOTE:

PUNCHING A-8 SPIKE HOLES, ESTIMATED WEIGHT 22.90 LBS.

PLATES TO BE MANUFACTURED ACCORDING TO CURRENT A.R.E.A. SPECIFICATIONS AND SHALL BE MADE FROM HOT WORKED HIGH CARBON STEEL.

BURLINGTON NORTHERN INC.
STANDARD PLAN

TIE PLATE

FOR R.E 115 LB. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973.

Recommended

F. A. Kempe
Director Track Engineering

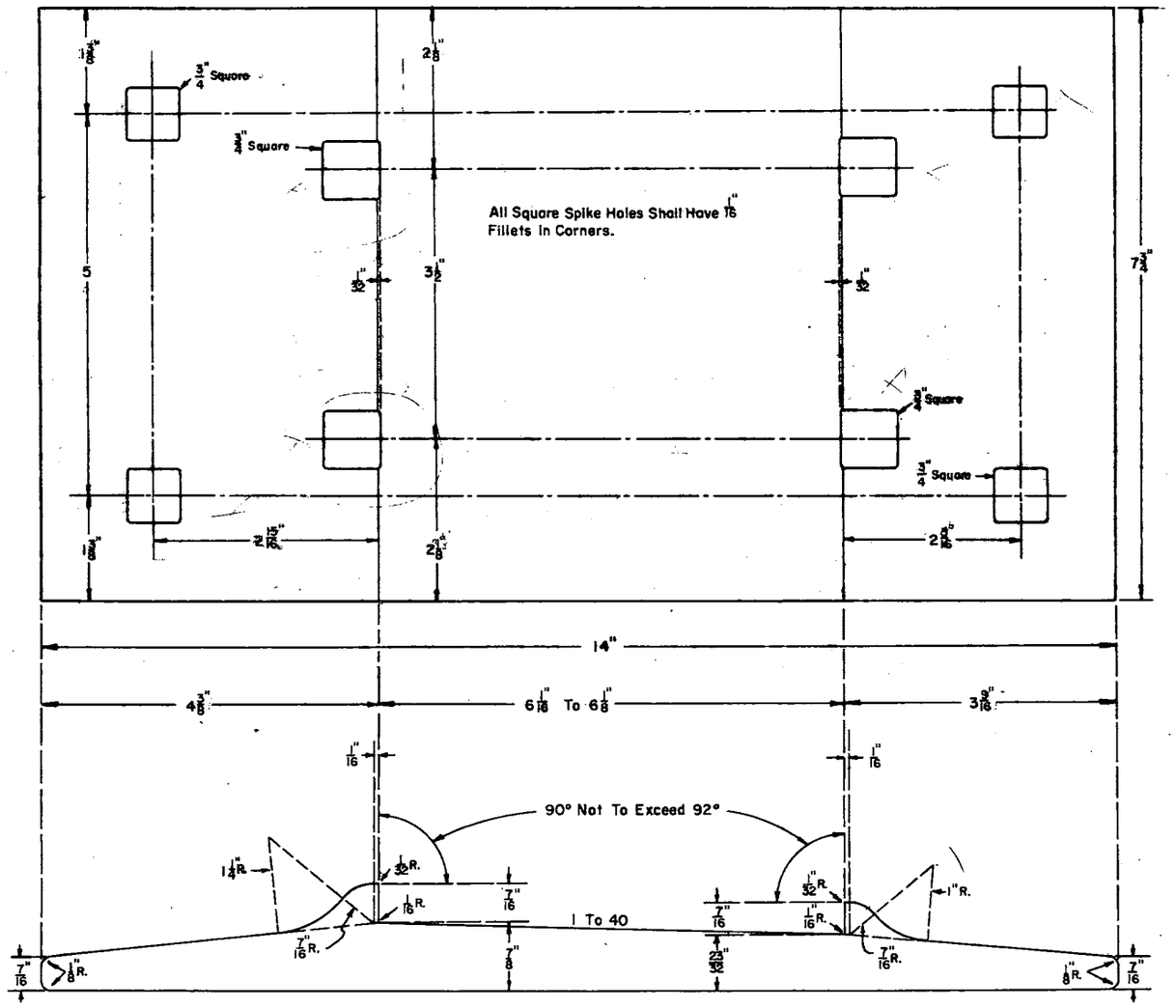
B. G. Anderson
Asst. Vice President Engineering

Approved

N. M. Lounsbury
Vice President, Operations

Dwg Nº C-1200.1

THIS PLAN SUPERSEDES PLAN NO. C-1200.0



NOTE

PUNCHING A-8 SPIKE HOLES, ESTIMATED WEIGHT 21.47 LBS.

PLATES TO BE MANUFACTURED ACCORDING TO CURRENT A.R.E.A. SPECIFICATIONS AND SHALL BE MADE FROM HOT WORKED HIGH CARBON STEEL.

BURLINGTON NORTHERN INC.
STANDARD PLAN

TIE PLATE

FOR R.E. 132 LB. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973.

Recommended

F. A. Kempe
Director Track Engineering

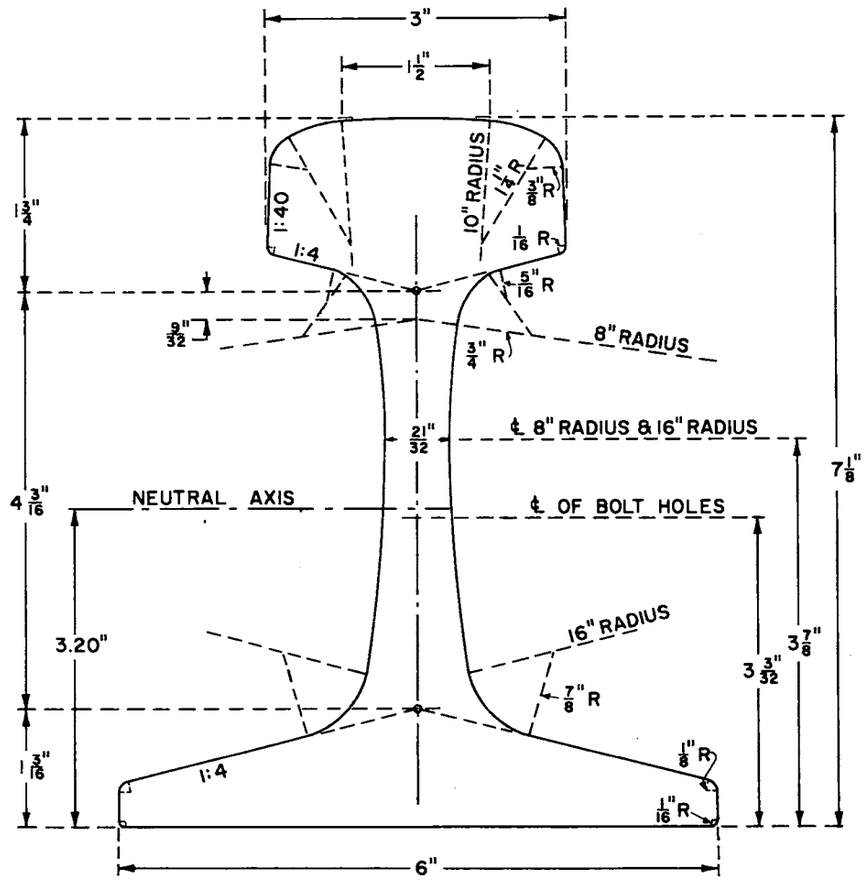
Approved

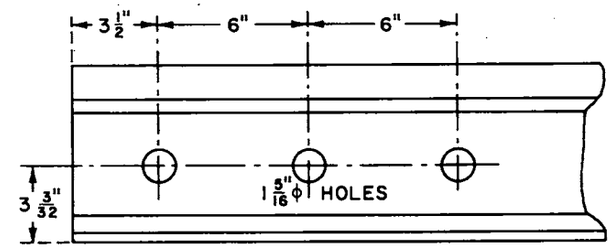
D. M. Rosenthal
Vice President, Operations

B. H. Anderson
Asst. Vice President Engineering

Dwg. № C-1203.1

THIS PLAN SUPERSEDES PLAN NO. 1203.0





DRILLING FOR R.E. 132 LB. RAIL

PROPERTIES

AREA OF HEAD	4.42 SQ. IN.	34.1 %
AREA OF WEB	3.66 SQ. IN.	28.3%
AREA OF BASE	4.87 SQ IN.	37.6%
TOTAL AREA	12.95 SQ IN.	100.0%
MOMENT OF INERTIA	88.2	
SECTION MODULUS, HEAD	22.5	
SECTION MODULUS, BASE	27.6	

WEIGHT 132.1 LBS. PER YARD

BURLINGTON NORTHERN INC.
STANDARD PLAN

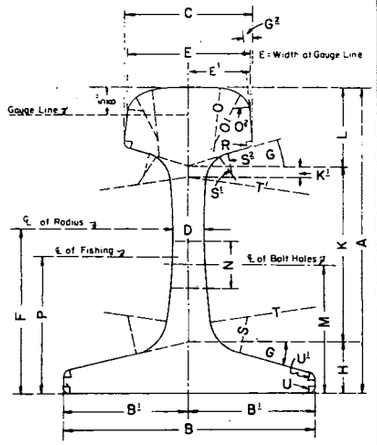
R.E. 132 LB. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JULY 16, 1970

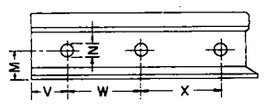
Recommended
B.H. Anderson
Asst. Vice President Engineering

Approved
W.M. Countryman
Vice President, Operations

Dwg. № C-1300.0



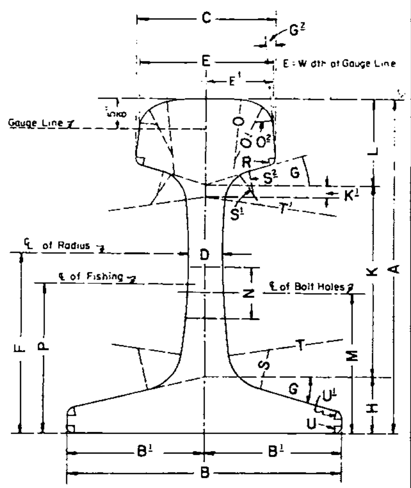
RAIL SECTION



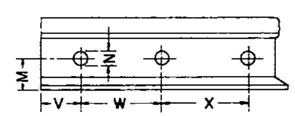
DRILLING

	RAIL SECTION																																									WT. LBS. PER.YD.	REMARKS
	TYPE	WT. LBS. PER.YD.		STANDARD PLAN OR FILE NO.	A	B	B¹	C		D	E	E¹	F	G	G¹	G²	H	K	K¹	L	M	N	O	O¹	O²	P	R	S	S¹	S²	T	T¹	U	U¹	V	W	X		
G.N.	G.N	110		3104-29-1	6 1/2"	5 1/2"	2 3/4"	2 3/4"		19/32"	2 21/32"	1 21/64"	3 1/4"	1:4	1:4	1:16	1 1/8"	3 3/4"	—	1 5/8"	3"	1 3/16"	14"	—	3/8"	3"	1/16"	5/8"	1/2"	—	14"	—	1/16"	1/16"	2 7/16"	7"	—	110	
Q	R.E	110		65831	6 1/4"	"	"	2 25/32"		"	2 5/8"	1 5/16"	3 1/8"	"	"	"	1 1/8"	3 13/32"	—	1 23/32"	2 45/64"	1 3/16"	"	—	"	2 53/64"	"	"	3/8"	—	"	—	"	"	2 15/32"	5"	—	110	
Q	R.E.	110		62186-B	"	"	"	"		"	"	"	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	"	"	—	"	—	"	"	"	"	6 1/2"	110	
Q	R.E.	110		82264	"	"	"	"		"	"	"	"	"	"	"	"	"	—	"	"	1 7/32"	"	—	"	"	"	"	"	—	"	—	"	"	2 3/8"	"	"	110	
N.P	ARA-B	100		T-5-6	5 31/64"	5 9/64"	2 73/128"	2 21/32"		9/16"	2 19/32"	1 19/64"	2 65/128"	13°	13°	3°	1 5/64"	2 39/64"	—	1 45/64"	2 65/128"	1 1/4"	12"	—	3/8"	2 65/128"	1/16"	5/16"	5/16"	—	12"	—	1/16"	1/16"	2 7/16"	6"	—	100	
N.P	R.E.	100		T-5-7	6"	5 3/8"	2 11/16"	2 11/16"		"	"	"	2 31/32"	1:4	1:4	1:16	1 1/16"	3 9/32"	—	1 21/32"	2 11/16"	"	14"	—	"	2 45/64"	"	3/8"	3/8"	—	14"	—	"	"	2 11/16"	5 1/2"	—	100	
G.N.	G.N.	100		3104-23-2	5 3/8"	5"	2 1/2"	2 3/4"		"	2 21/32"	1 21/64"	2 13/16"	"	"	"	1 1/8"	3"	—	1 5/8"	2 5/8"	1 3/16"	12"	—	7/16"	2 5/8"	"	"	"	—	"	—	"	"	2 7/16"	7"	—	100	
Q	ARA	100		74955-C	6"	5 1/2"	2 3/4"	"		"	2 11/16"	1 11/32"	2 15/16"	"	"	1:16	1 1/16"	3 3/8"	—	1 9/16"	"	"	14"	—	3/8"	2 3/4"	"	3/8"	"	—	"	—	"	"	2 15/32"	5"	—	100	
Q	ASCE	100		41470	5 3/4"	5 3/4"	2 7/8"	"		"	2 3/4"	1 3/8"	2 65/128"	13°	13°	Vert.	31/32"	3 5/64"	—	1 45/64"	2 65/128"	1 1/8"	12"	—	5/16"	2 65/128"	"	1/4"	1/4"	—	12"	—	"	"	2 15/32"	"	5"	100	
N.P	ARA-B	90		T-5-5	5 17/64"	4 49/64"	2 49/128"	2 9/16"		9/16"	2 15/32"	1 15/64"	2 11/32"	13°	13°	3°	1 1/32"	2 5/8"	—	1 39/64"	2 11/32"	1 1/4"	12"	—	3/8"	2 11/32"	1/16"	5/16"	5/16"	—	12"	—	1/16"	1/16"	2 7/16"	6"	—	90	
G.N.	G.N.	90	1918	3104-24-1	5 3/8"	5"	2 1/2"	2 5/8"		19/32"	2 17/32"	1 17/64"	2 21/32"	"	"	5°	"	2 7/8"	—	1 15/32"	2 7/16"	1 3/16"	14"	—	5/8"	2 15/32"	"	5/8"	3/8"	—	14"	—	"	"	"	"	—	90	
G.N.	G.N.	90	1908	3104-40-23	"	"	"	"		5/8"	"	"	2 5/8"	"	"	"	1"	"	—	1 1/2"	"	"	"	—	"	2 7/16"	"	3/8"	"	—	"	—	"	"	"	"	—	90	
Q	ARA-A	90		73332-B	5 5/8"	5 1/8"	2 9/16"	2 9/16"		9/16"	2 1/2"	1 1/4"	2 29/32"	1:4	1:4	1:16	"	3 5/32"	—	1 15/32"	2 29/64"	"	"	—	3/8"	2 37/64"	"	"	"	—	"	—	"	"	2 15/32"	5"	—	90	

Dwg. C-1304.0 SHEET 2

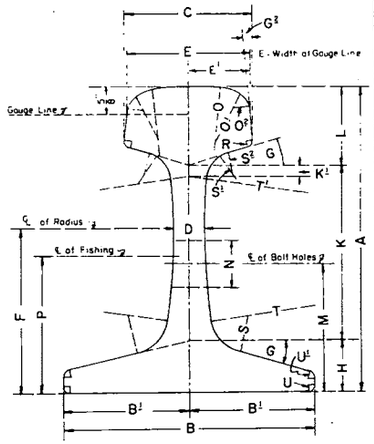


RAIL SECTION

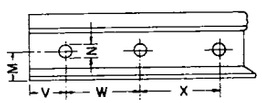


DRILLING

	RAIL SECTION TYPE	WT. LBS. PER YD.		STANDARD PLAN OR FILE NO.	A	B	B¹	C	D	E	E¹	F	G	G¹	G²	H	K	K¹	L	M	N	O	O¹	O²	P	R	S	S¹	S²	T	T¹	U	U¹	V	W	X	WT. LBS. PER YD	REMARKS
N.P	ASCE	85		T-5-4	5 3/16"	5 3/16"	2 19/32"	2 9/16"	9/16"	2 9/16"	1 9/32"	2 17/64"	13°	13°	Vert.	57/64"	2 3/4"	—	1 35/64"	2 17/64"	1 1/8"	12"	—	5/16"	2 17/64"	1/16"	1/4"	1/4"	—	12"	—	1/16"	1/16"	3"	6"	—	85	
G.N.	G.N.	85		3104-4022	5"	5"	2 1/2"	2 21/32"	21/32"	"	"	2 11/64"	14°	14°	5°	29/32"	2 1/2"	—	1 19/32"	2 11/64"	1 1/16"	"	—	5/8"	2 5/32"	1/8"	"	"	—	"	—	3/32"	3/32"	2 7/16"	5"	—	85	
Q	McClure	85		41482-A	5 3/16"	"	"	2 9/16"	1/2"				14° 02'	15° 15'	5"	7/8"	"	—	1 13/16"	2 1/8"	1 1/8"	11"	—	3/8"	2 1/8"	"	1/2"	3/8"	—	8"	—	1/8"	1/8"	2 7/8"	6"	—	85	
Q	Q	85		41481-A	5 3/16"	5 3/16"	2 19/32"	2 21/32"	9/16"	—	—	2 17/64"	13°	13°	5°	57/64"	2 3/4"	—	1 35/64"	2 9/64"	1 3/16"	12"	—	"	2 17/64"	1/16"	1/4"	1/4"	—	12"	—	1/16"	1/16"	2 7/16"	5"	—	85	
Q	Q	85		41479-B	"	"	"	"	"	—	—	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	3/8"	"	-	"	—	"	"	2 15/32"	"	5"	85	
Q		85		41478-C	"	"	"	"	"	—	—	—	"	"	"	"	"	—	—	"	"	"	—	"	"	"	1/4"	"	—	"	—	"	"	"	"	—	85	
Q	REROLLED Q	85		41483-A	5 1/16"	5 1/16"	2 17/32"	2 7/16"	17/32"	—	—	2 29/128"	"	"	"	27/32"	2 49/64"	—	1 29/64"	2 3/32"	1 1/16"	"	—	5/16"	2 29/128"	"	"	"	—	"	—	"	"	2 13/32"	"	—	85	
Q		85		41477-B	5 3/16"	5 3/16"	2 19/32"	2 21/32"	9/16"	—	—	—	"	"	"	57/64"	2 3/4"	—	1 35/64"	2 9/64"	1 3/16"	"	—	3/8"	2 17/64"	"	"	—	—	"	—	"	"	2 15/32"	"	5"	85	
Q	McClure	85		41482-A	"	5"	2 1/2"	2 9/16"	1/2"	—	—	—	14° 02'	15° 15'	5"	7/8"	2 1/2"	—	1 13/16"	2 1/8"	1 1/8"	11"	—	"	2 1/8"	1/8"	1/2"	3/8"	—	8"	—	1/8"	1/8"	2 7/8"	6"	9"	85	
Q		85		57934-D	"	5 3/16"	2 19/32"	2 21/32"	9/16"	—	—	2 17/64"	13°	13°	5°	57/64"	2 3/4"	—	1 35/64"	2 9/64"	1 3/16"	12"	—	"	2 17/64"	1/16"	3/8"	1/4"	—	12"	—	1/16"	1/16"	2 15/32"	5"	—	85	
G.N	ASCE	80		3104-4021	5"	5"	2 1/2"	2 1/2"	35/64"	2 1/2"	1 1/4"	2 3/16"	13°	13°	—	7/8"	2 5/8"	—	1 1/2"	2 3/16"	1 1/16"	12"	—	5/16"	2 3/16"	1/16"	1/4"	1/4"	—	12"	—	1/16"	1/16"	2 7/16"	6"	—	80	
G.N.	G.N	80	1904	3104-40-20	"	"	"	2 13/32"	5/8"	2 5/16"	1 5/32"	2 9/64"	14°	14°	5°	"	2 1/2"	—	1 5/8"	2 9/64"	1"	10"	—	5/8"	2 1/8"	1/8"	1/4"	1/4"	—	"	—	7/64"	7/64"	2 1/8"	4 1/2"	—	80	
G.N.	G.N	80	1900	3104-40-19	"	"	"	2 3/8"	23/32"	2 17/64"	1 17/128"	2 5/64"	"	"	"	13/16"	"	—	1 11/16"	2 5/64"	"	"	—	"	2 1/16"	"	"	"	—	"	—	"	"	"	"	7	80	
G.N.	G.N.	80	1891	3104-4018	"	4 3/4"	2 3/8"	2 1/2"	9/16"	2 1/2"	1 1/4"	2 1/8"	"	"	—	27/32"	"	—	1 21/32"	2 1/8"	"	12"	—	5/16"	2 3/32"	"	"	"	—	"	—	1/16"	1/16"	"	"	7"	80	
G.N.	G.N	77 1/2		3104-17-1	5"	5"	2 1/2"	2 3/8"	5/8"	2 17/64"	1 17/128"	2 5/64"	14°	14°	5°	13/16"	2 1/2"	—	1 11/16"	2 5/64"	1"	10"	—	5/8"	2 1/16"	1/8"	1/4"	1/4"	—	12"	—	7/64"	7/64"	2 1/8"	4 1/2"	7"	77 1/2	



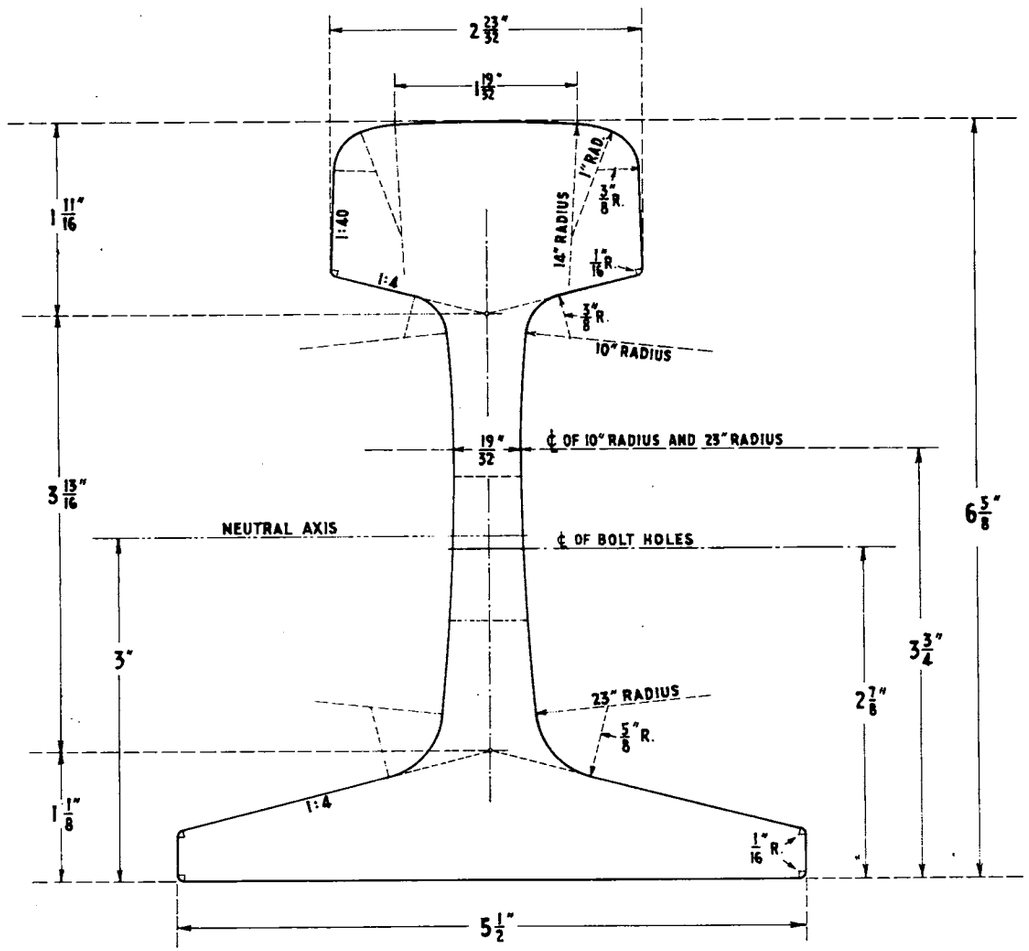
RAIL SECTION



DRILLING

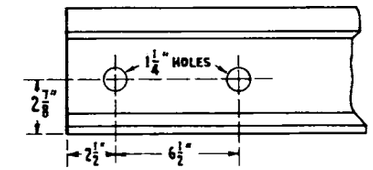
	RAIL SECTION																																							WT. LBS. PER.YD	REMARKS
	TYPE	WT. LBS. PER. YD.		STANDARD PLAN OR FILE NO.	A	B	B¹	C	D	E	E¹	F	G	G¹	G²	H	K	K¹	L	M	N	O	O¹	O²	P	R	S	S¹	S²	T	T¹	U	U¹	V	W	X		
G.N.	G.N	75	1896	3104-4016	5"	5"	2 1/2"	2 19/64"	9/16"	2 3/16"	1 3/32"	2 5/64"	14°	14°	5°	13/16"	2 1/2"	—	1 11/16"	2 5/64"	1"	10"	—	5/8"	2 1/16"	1/8"	1/4"	1/4"	—	12"	—	7/64"	7/64"	2 1/8"	4 1/2"	7"	75	
G.N.	G.N.	75	1893	3104-40-15	"	4 3/4"	2 3/8"	2 7/16"	9/16"	2 5/16"	1 5/32"	2 1/16"	"	"	6°	25/32"	"	—	1 29/32"	2 1/16"	"	"	—	"	2 1/32"	"	"	"	—	"	—	"	"	"	"	"	75	
G.N.	ST.P.M&M	75	1887	3104-4014	4 3/4"	4 1/2"	2 1/4"	2 1/2"	1/2"	2 3/8"	1 3/16"	1 27/32"	13°	13°	"	"	2 1/8"	—	1 27/32"	1 27/32"	"	"	—	"	1 27/32"	1/4"	"	"	—	8"	—	3/64"	3/64"	"	"	"	75	
Q	ASCE	75		73410	4 13/16"	4 13/16"	2 15/32"	2 15/32"	17/32"	2 15/32"	1 15/64"	2 15/128"	"	"	Vert.	27/32"	2 35/64"	—	1 27/64"	2 7/64"	1 1/8"	12"	—	3/16"	2 15/128"	1/16"	"	"	—	12"	—	1/16"	1/16"	2 3/8"	5"	—	75	
Q	REROLLED A.S.C.E.	75		41486 A	4 29/32"	4 21/32"	2 21/64"	2 5/16"	17/32"	2 5/16"	1 5/32"	Vert.	"	"	"	53/64"	"	—	1 9/32"	"	"	"	—	1/4"	2 13/128"	"	"	"	—	Vert.	—	"	"	"	"	5	75	
Q		75		41484 A	4 13/16"	4 13/16"	2 15/32"	2 15/32"	17/32"	2 15/32"	1 15/64"	2 15/128"	"	"	"	27/32"	"	—	1 27/64"	"	"	"	—	5/16"	2 15/128"	"	"	"	—	12"	—	"	"	"	"	"	75	
N.P.		72		T-5-3	4 3/4"	4 3/4"	2 3/8"	2 3/8"	9/16"	2 9/32"	1 3/16"	—	14°	14°	Vert.	27/32"	2 1/2"	—	1 13/32"	2 3/32"	1"	12"	—	5/16"	2 3/32"	1/8"	1/4"	1/4"	—	12"	—	1/16"	1/16"	3"	6"	—	72	
G.N.	G.N.	72		3104-4013	4 29/32"	4 9/16"	2 9/32"	2 13/32"	17/32"	2 5/16"	1 5/32"	2 1/8"	13°	13°	—	13/16"	2 17/32"	—	1 9/16"	2 1/8"	"	"	—	"	2 5/64"	1/16"	"	"	—	"	—	"	"	2 1/8"	4 1/2"	7"	72	
G.N.	ASCE	70		3104-4012	4 3/8"	4 3/8"	2 5/16"	2 7/16"	33/64"	2 7/16"	1 7/32"	2 3/64"	13°	13°	Vert.	13/16"	2 15/32"	—	1 11/32"	2 3/64"	1"	12"	—	5/16"	2 3/64"	1/16"	1/4"	1/4"	—	12"	—	1/16"	1/16"	2 7/16"	5"	—	70	
Q	I.&S.T.L.	70		46135	4 9/16"	4 3/4"	2 3/8"	"	17/32"	"	"	2 1/32"	"	"	Vert	25/32"	2 1/2"	—	1 9/32"	2"	15/16"	"	—	"	2 1/32"	"	3/8"	3/8"	—	"	—	"	"	"	"	—	70	
G.N	G.N.	68		3104-40-11	4 3/8"	4 1/2"	2 1/4"	2 1/2"	1/2"	2 7/16"	1 7/32"	1 27/32"	13°	13°	—	25/32"	2 1/8"	—	1 15/32"	1 27/32"	1"	10"	—	5/16"	1 29/32"	7/32"	1/4"	1/4"	—	8"	—	9/64"	9/64"	2 1/8"	4 1/2"	7"	68	
G.N.	G.N.	66 1/2		3104-4010	4 9/16"	4 9/16"	2 5/32"	2 1/4"	15/32"	2 3/8"	1 3/16"	1 25/32"	13°	13°	—	23/32"	"	—	1 23/32"	1 25/32"	1"	12"	—	5/16"	1 25/32"	1/8"	1/4"	1/4"	—	8"	—	1/8"	1/8"	2 1/8"	4 1/2"	7"	66 1/2	
N.P.	N.P.	66		T-5-2A	4 17/32"	4 1/2"	2 1/4"	2 1/8"	17/32"	2 1/8"	1 1/16"	—	13°	13°	Vert.	49/64"	2 11/32"	—	1 27/64"	1 13/16"	1"	12"	—	1/4"	1 15/16"	3/32"	1/4"	1/4"	—	12"	—	1/16"	1/16"	3"	6"	—	66	
N.P.	Low Roll	66		1090-106	4 3/8"	4 3/8"	2 7/16"	2 13/32"	1/2"	2 9/32"	1 9/64"	—	"	"	—	23/32"	2 5/32"	—	1 1/2"	1 51/64"	"	"	—	11/32"	1 31/64"	1/8"	9/32"	9/32"	—	"	—	—	—	"	"	—	66	
Q	N.P.	66		41488-B	4 17/32"	4 1/2"	2 1/4"	2 5/16"	17/32"	2 5/16"	1 5/32"	—	"	"	Vert	49/64"	2 11/32"	—	1 27/64"	1 13/16"	"	"	—	1/4"	1 15/16"	3/32"	1/4"	1/4"	—	"	—	"	"	2 7/16"	5"	—	66	
Q	O.P. WORN	66		41489-B	4 15/32"	4 1/16"	2 7/32"	2 13/32"	15/32"	2 3/8"	1 3/16"	1 13/16"	"	"	4 1/2" R	3/4"	2 1/8"	—	1 17/32"	"	7/8"	10"	—	3/8"	1 13/16"	1/8"	"	"	—	11"	—	—	—	3 3/8"	5 1/2"	—	66	

Dwg C-1304.0 SHEET 4



SECTION

ESTIMATED WEIGHT PER YARD 112.3 LBS.

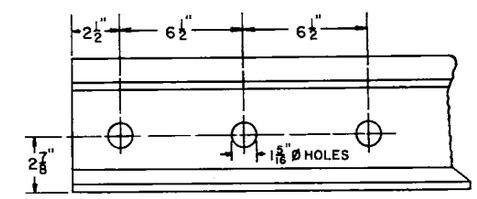


DRILLING FOR R.E. 112 LB. BOLTED RAIL
(USE 1 1/16" BOLTS)

PROPERTIES

AREA OF HEAD	3.95	SQ. INCHES	35.9 %
AREA OE WEB	2.77	SQ. INCHES	25.1 %
AREA OF BASE	4.29	SQ. INCHES	39.0 %
TOTAL	11.01	SQ. INCHES	100.0 %

MOMENT OF INERTIA 65.5
SECTION MODULUS HEAD..... 18.1
SECTION MODULUS BASE..... 21.8



DRILLING FOR R.E. 112 LB. WELDED RAIL
(USE 1 1/8" BOLTS)

BURLINGTON NORTHERN INC.
STANDARD PLAN

R.E. 112 LB. RAIL

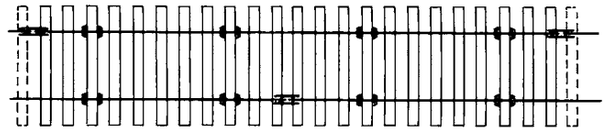
ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1972

Recommended — Asst. Vice President Engineering

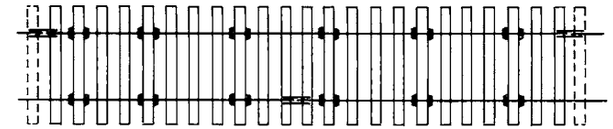
Approved — Vice President, Operations

Dwg. Nº C-1302.0

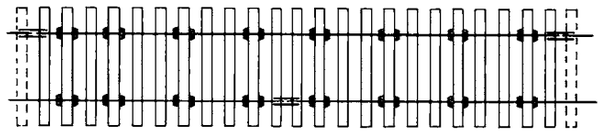
65 70



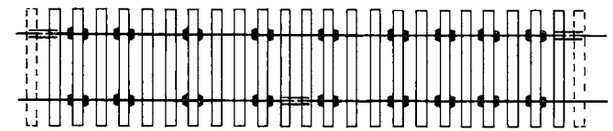
PLAN Nº 1
16 ANCHORS PER PANEL



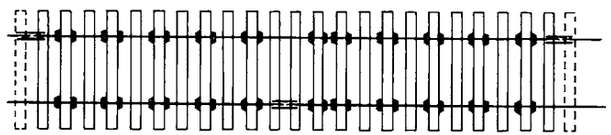
PLAN Nº 2
24 ANCHORS PER PANEL



PLAN Nº 3
32 ANCHORS PER PANEL



PLAN Nº 4
36 ANCHORS PER PANEL



PLAN Nº 5
44 ANCHORS PER PANEL

NOTE: DOUBLE TRACK SHALL BE ANCHORED PER PLAN Nº 3.

NOTE: THIS PLAN IS INTENDED TO SHOW PLACEMENT OF ANCHORS. NUMBER OF ANCHORS PER PANEL SHALL BE SPECIFIED BY ASST. VICE PRESIDENT ENGINEERING.

BURLINGTON NORTHERN INC.
STANDARD PLAN

METHOD OF ANCHORING TRACK WITH 39 FOOT PANELS

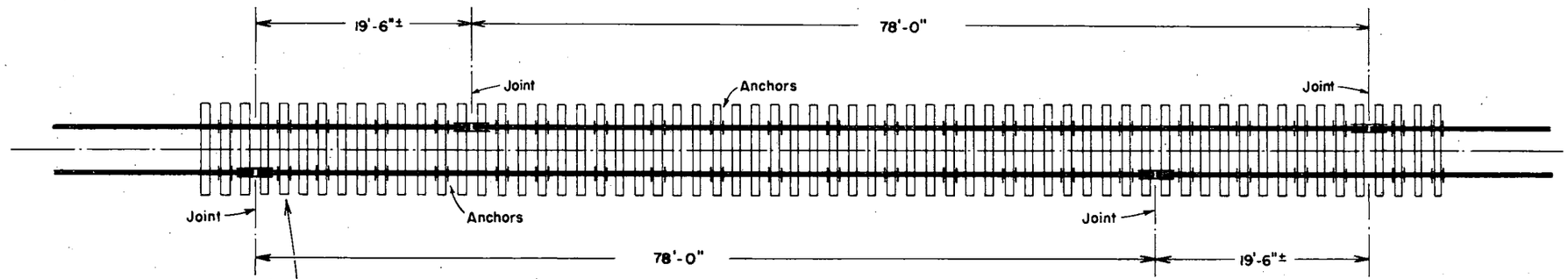
ENGINEERING DIVISION, ST. PAUL, MINN. APRIL, 1975

Recommended
B. H. Anderson
Asst. Vice President Engineering

Approved
J. C. Thrington
Vice President, Operations

Dwg. Nº C-1350.1

THIS PLAN SUPERSEDES PLAN NO. C-1350.0



4 anchors per tie every 3rd tie
(64 anchors to panel)

NOTE – Complete the installation of all 64 anchors per panel by installing extra anchors here if any are left over after anchoring every 3rd tie.

Anchors shall be applied with machines as far as practical.

BURLINGTON NORTHERN INC.
STANDARD PLAN

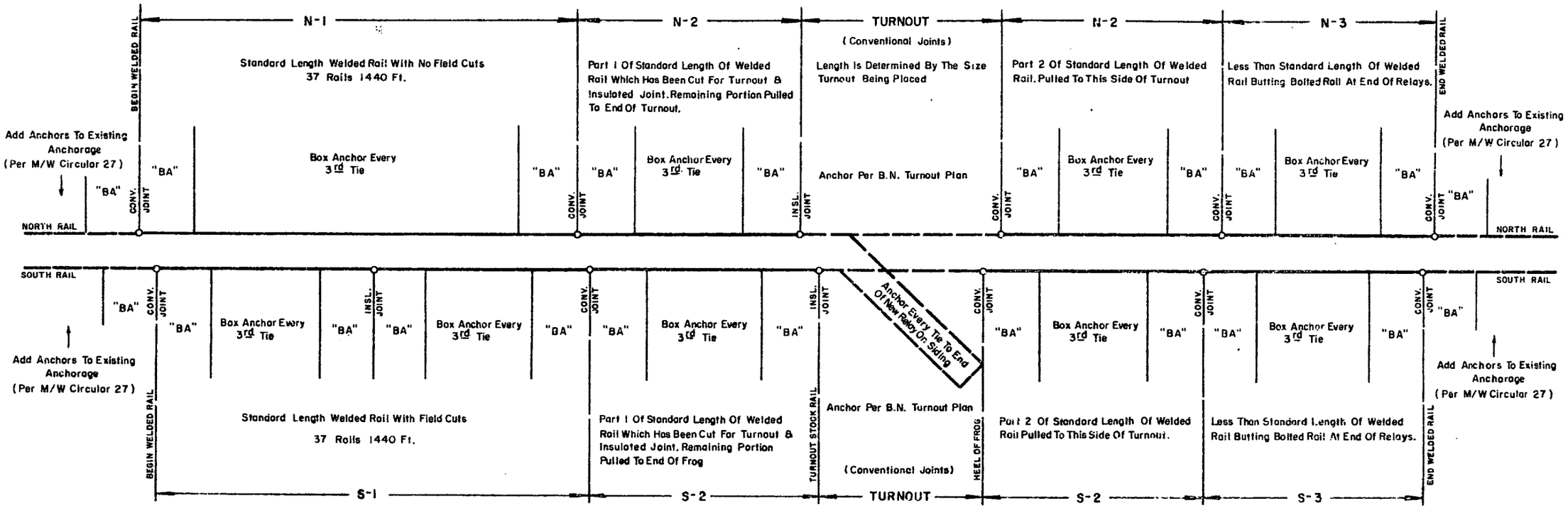
METHOD OF ANCHORING TRACK WITH 78 FOOT PANELS

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1971

Recommended: B.H. Anderson — Asst. Vice President Engineering

Approved: S.B. Thrington — Vice President, Operations

Dwg Nº C-1351.0



NOTE:

"BA" BOX ANCHOR 184 TIES EACH SIDE OF BOLTED JOINT.

BURLINGTON NORTHERN INC.
STANDARD PLAN

METHOD OF ANCHORING CONTINUOUS WELDED RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1971

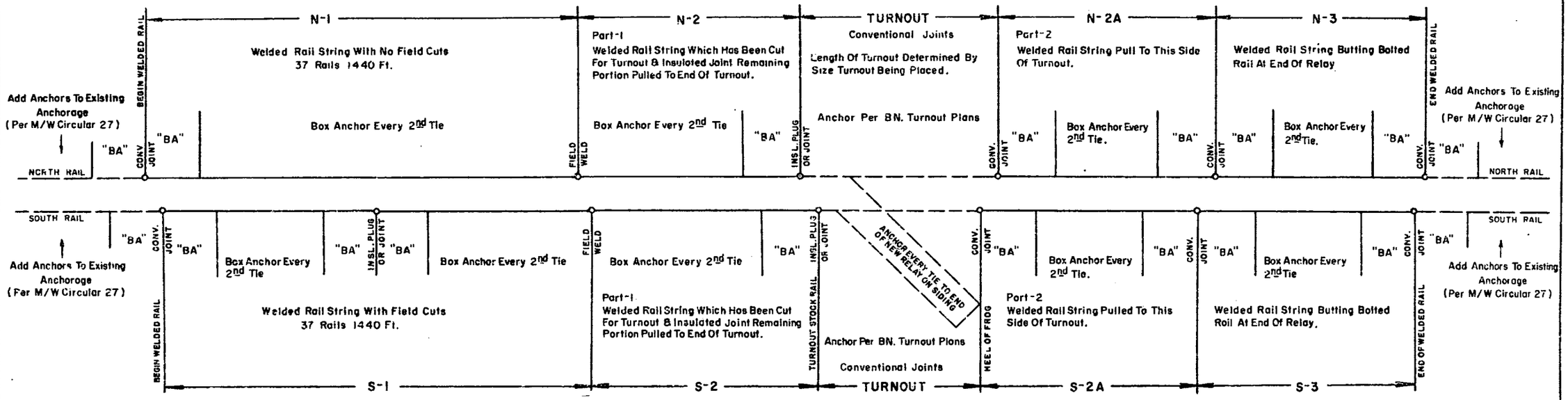
Recommended: R. G. Anderson, Asst. Vice President Engineering

Approved: J. C. Thrington, Vice President, Operations

Dwg. № C-1352.2

Revised 3-73, 1-81
THIS PLAN SUPERSEDE PLAN № C-1352.1

SEE SHEET 2 FOR HEAVY HAUL ANCHORING



NOTE:

"BA" BOX ANCHOR 184 TIES EACH SIDE OF BOLTED JOINT.

BURLINGTON NORTHERN INC.
STANDARD PLAN

METHOD OF ANCHORING CONTINUOUS WELDED RAIL

(IN HEAVY HAUL TERRITORY)

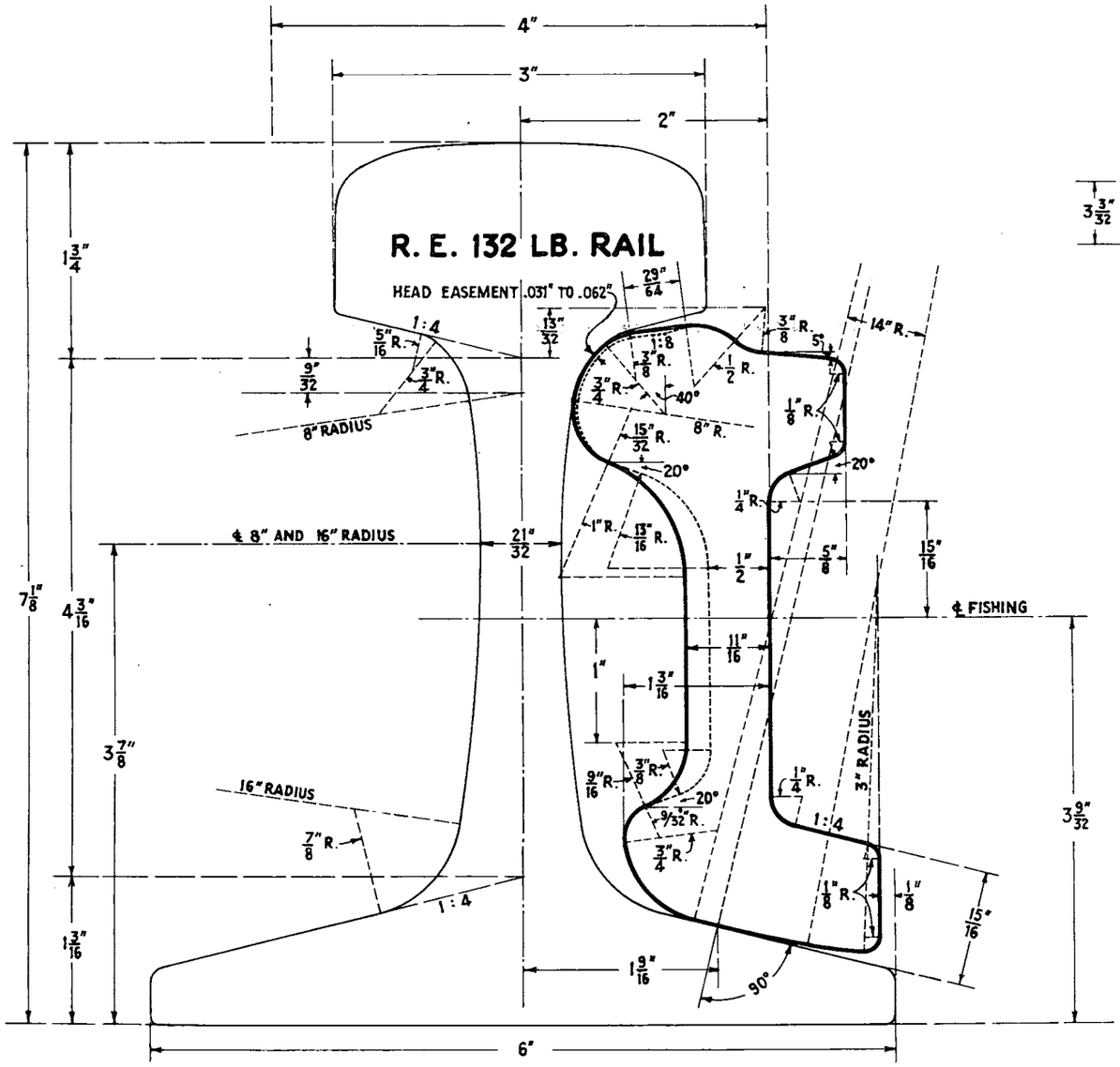
ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1981

Recommended: Asst. Vice President Engineering

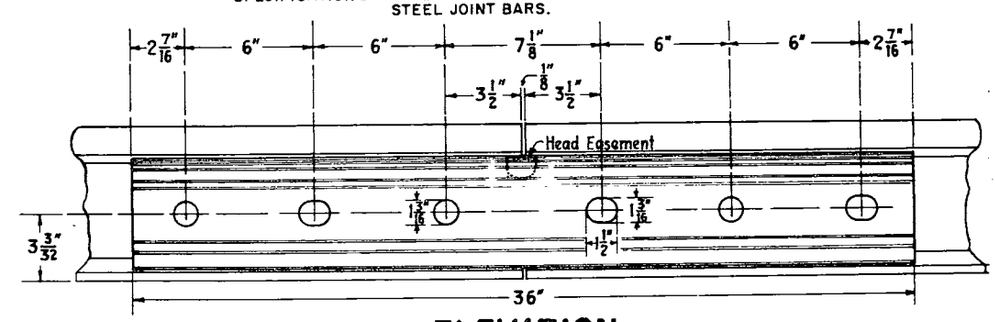
Approved: Vice President Maintenance & Engineering

Dwg. No. C-1352.0

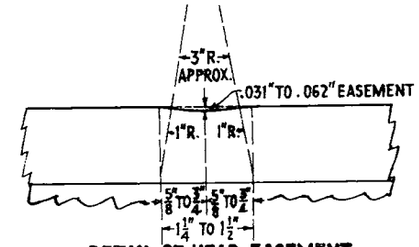
SHEET 2



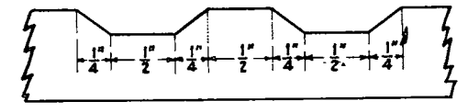
SPECIFICATIONS: A.R.E.A. SPECIFICATIONS FOR HIGH CARBON STEEL JOINT BARS.



ELEVATION



DETAIL OF HEAD EASEMENT



SECTION OF WEB

JOINT

MOMENT OF INERTIA	31.8
SECTION MODULUS TOE	13.2
" " BTM.	12.0

BAR

GROSS WEIGHT		58.86 LBS
MAX. AREA	SQ. IN.	6.01
MIN. "	" "	5.53
AVG. "	" "	5.77

BURLINGTON NORTHERN INC.
STANDARD PLAN

TOELESS HEADFREE JOINT BAR FOR R.E.132 LB. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973

Recommended
F. A. Kempe
Director Track Engineering

Approved
R. M. Lorentzsen
Vice President, Operations

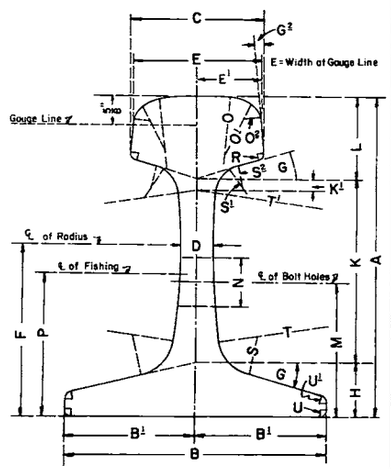
B. H. Andersen
Asst Vice President Engineering

Dwg. Nº C-1400.1

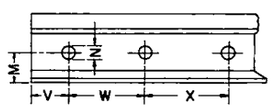
RAIL JOINT CO. TEMPLET 132 T 42

THIS PLAN SUPERSEDES PLAN NO. C-1400.0

BURLINGTON NORTHERN



RAIL SECTION

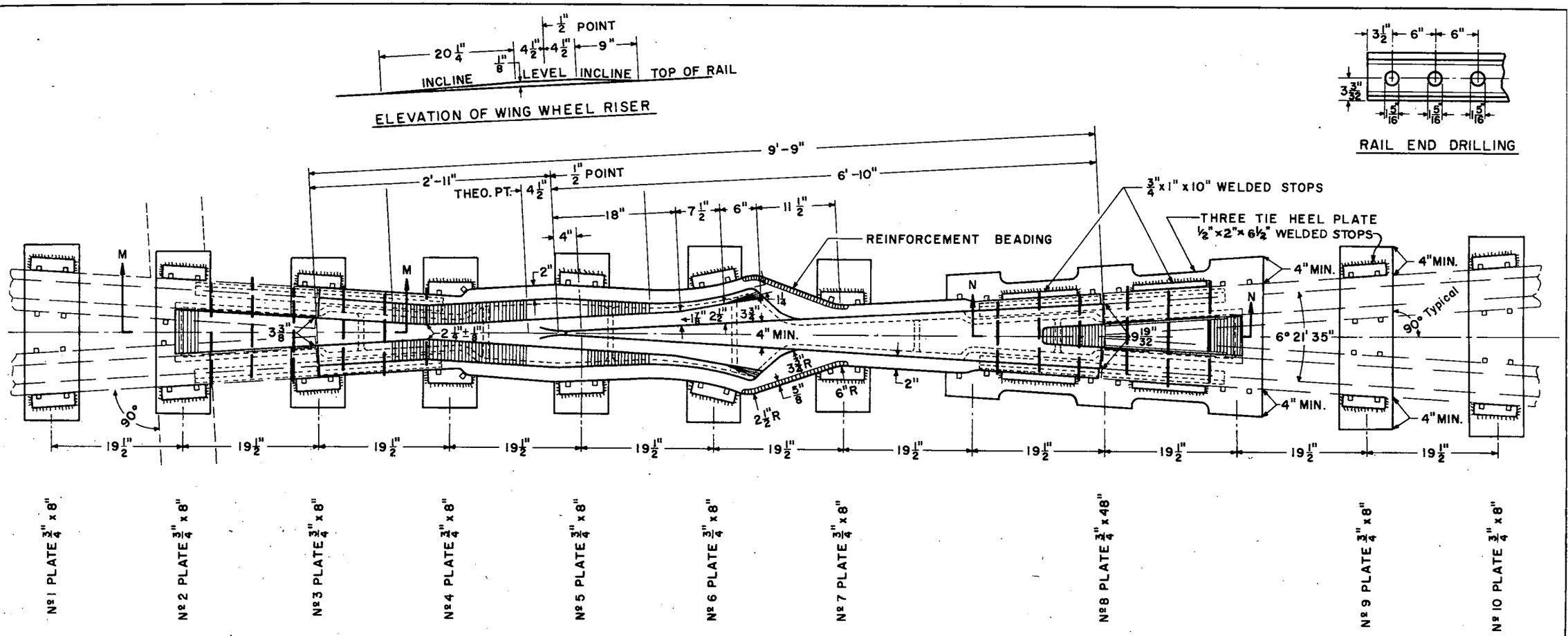


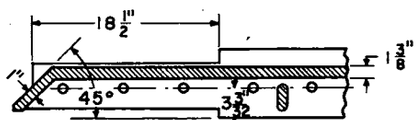
DRILLING

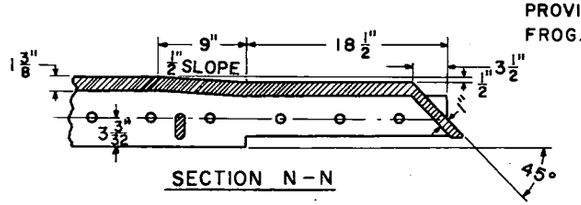
	TYPE	WT. LBS. PER.YD.		STANDARD PLAN OR FILE NO.	A	B	B¹	C	D	E	E¹	F	G	G¹	G²	H	K	K¹	L	M	N	O	O¹	O²	P	R	S	S¹	S²	T	T¹	U	U¹	V	W	X	WT. LBS. PER.YD.	REMARKS
Q	C.F.&I.	136		106132-B	7 5/16"	6"	3"	2 15/16"	11/16"	2 29/32"	1 29/64"	3 7/8"	1:4	1:4	1:40	1 3/16"	4 3/16"	9/32"	1 15/16"	3 3/32"	1 1/8"	14"	1 1/4"	9/16"	3 9/32"	5/16"	3/4"	3/4"	5/16"	20"	8"	1/16"	1/8"	3 1/2"	6"	6"	136	
B.N.	RE	136			"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1 5/16"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	136	
G.N.	RE	132		3104-38-1	7 1/8"	6"	3"	3"	21/32"	2 31/32"	1 31/64"	3 7/8"	1:4	1:4	1:40	1 3/16"	4 3/16"	9/32"	1 3/4"	3 3/32"	1 5/16"	10"	1 1/4"	3/8"	3 9/32"	1/16"	7/8"	3/4"	5/16"	16"	8"	1/16"	1/8"	3 1/2"	6"	6"	132	
N.P.	RE	132		T-5-12	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1 1/4"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	132	
G.N.	RE	131		3104-34-1	7 1/8"	6"	3"	3"	21/32"	2 31/32"	1 31/64"	4 1/4"	1:4	1:4	1:40	1 3/16"	4 3/16"	—	1 3/4"	3 3/32"	1 5/16"	14"	1"	3/8"	3 9/32"	1/16"	3/4"	1/2"	—	23"	10"	1/16"	1/8"	2 1/2"	6 1/2"	—	131	
N.P	RE	131		T-5-9	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	1 1/4"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	—	131	
NP	RE	131		T-5-9A	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"			6 1/2"	131	
Q	RE	131		76356	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	1 1/8"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	"	131	
NP	RE	130		T-5-8	6 3/4"	6"	3"	2 15/16"	21/32"	2 53/64"	1 53/128"	3 3/8"	1:4	1:4	1:16	1 7/32"	3 11/16"	—	1 7/32"	3 1/16"	1 5/16"	14"	—	3/8"	3 1/16"	1/16"	3/4"	1/2"	—	14"	—	1/16"	1/16"	2 11/16"	5 1/2"	—	130	
GN	Penna.	130		3104-27-1	6 5/8"	5 1/2"	2 3/4"	3"	11/16"	3"	1 1/2"	3 1/4"	14°	18°	Vert.	"	3 13/32"	—	2"	2 3/4"	"	12"	—	7/16"	2 59/64"	"	"	"	—	16"	—	"	"	2 21/32"	7 1/2"	—	130	
Q	T.R.	129		95845C	7 5/16"	6"	3"	2 5/8"	21/32"	2 9/16"	1 9/32"	3 1/2"	1:4	1:4	1:40	1 3/16"	4 9/32"	—	1 27/32"	3 1/4"	1 5/16"	14"	—	3/8"	3 21/64"	1/4"	1"	11/16"	—	14"	—	1/16"	1/8"	2 1/2"	6 1/2"	6 1/2"	129	
N.P.	C.F.&I.	119		1090-279	6 13/16"	5 1/2"	2 3/4"	2 21/32"	5/8"	2 5/8"	1 5/16"	3 1/4"	1:4	1:4	1:40	1 1/8"	3 13/16"	11/16"	1 7/8"	2 7/8"	1 1/4"	14"	1 1/2"	9/16"	3 3/32"	1/4"	3/4"	3"	3/4"	14"	3"	1/16"	1/16"	3 1/2"	6"	6"	119	
N.P.	RE	115		T-5-11A	6 3/8"	5 1/2"	2 3/4"	2 29/32"	5/8"	2 11/16"	1 11/32"	3 1/4"	1:4	1:4	1:40	1 1/8"	3 13/16"	11/16"	1 11/16"	2 7/8"	1 1/4"	10"	1 1/2"	3/8"	3 1/32"	1/16"	3/4"	3"	3/4"	14"	3"	1/16"	1/16"	3 1/2"	6"	6"	115	
G.N.	RE	115		3104-37-1	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	115	
N.P	RE	115		T-5-11	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	115	
N.P.	RE	112		T-5-10	6 5/8"	5 1/2"	2 3/4"	2 29/32"	15/32"	2 11/16"	1 11/32"	3 3/4"	1:4	1:4	1:40	1 1/8"	3 13/16"	—	1 11/16"	2 7/8"	1 1/4"	14"	1"	3/8"	3 1/32"	1/16"	5/8"	3/8"	—	23"	10"	1/16"	1/16"	2 1/2"	6 1/2"	—	112	
G.N	RE	112		3104-35-2	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	—	112	
Q	RE	112		79844-A	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	1 1/8"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	—	112	
Q	RE	112			"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	1 3/16"	24"	"	1/4"	"	"	"	"	—	"	"	"	"	2 15/32"	5"	—	112	
Q	TR	112		95643-B	6 3/4"	"	"	2 1/2"	5/8"	2 31/64"	1 31/128"	3 1/8"	"	"	"	"	3 7/8"	—	1 3/4"	2 7/8"	1 1/8"	14"	—	3/8"	3 1/16"	1/4"	3/4"	11/16"	—	20"	—	"	"	2 1/2"	6 1/2"	6 1/2"	112	
Q	TR	112		86979	"	"	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	"	"	—	"	—	"	"	"	"	—	112	

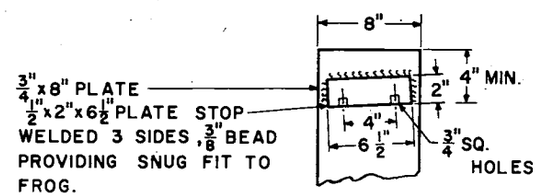
Revised 6-75, 4-80
THIS PLAN SUPERSEDES PLAN Nº C-1304.1

Dwg. C-1304.2 SHEET 1









DETAIL OF TIE PLATES SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 671-55 EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS: (9-1-132), (9-2-132), (9-3-132) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.
3. THE THREE TIE HEEL PLATE TO BE 3/4" THICK WITH 3/4"x1"x10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 SOLID MANGANESE STEEL FROG

132 LB. R. E. RAIL

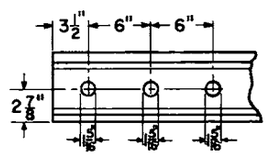
ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1970

Recommended: B. H. Anderson — Asst. Vice President Engineering

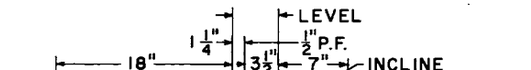
Approved: M. M. Hornsby — Vice President, Operations

Dwg. Nº C-1807.3

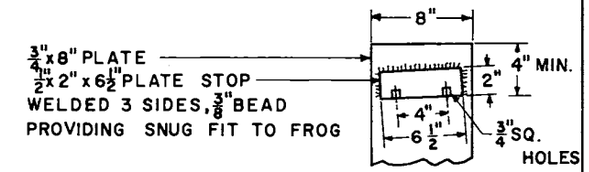
Revised 6-73, 6-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1807.2



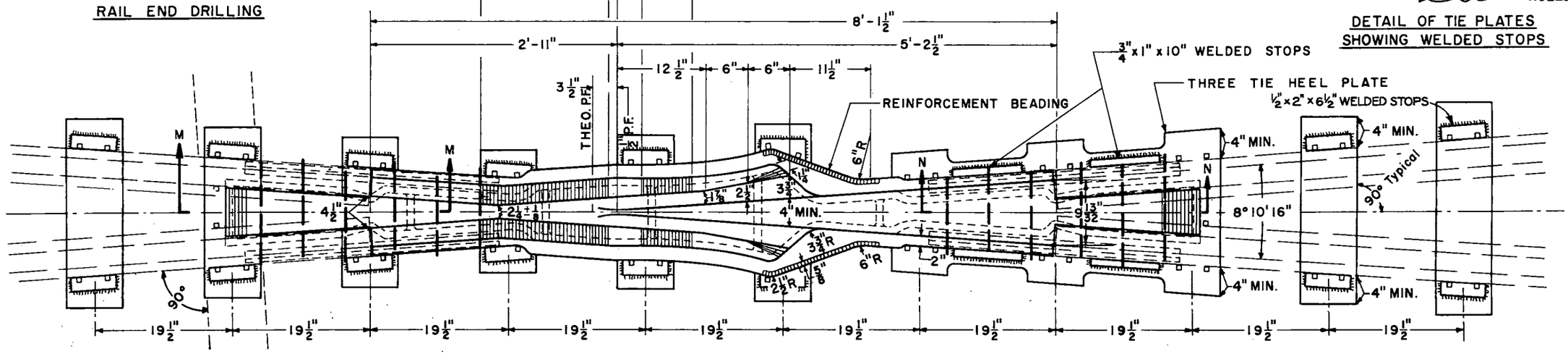
RAIL END DRILLING



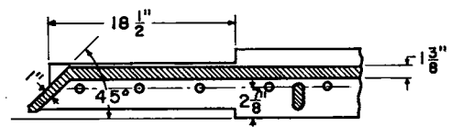
ELEVATION OF WING WHEEL RISER



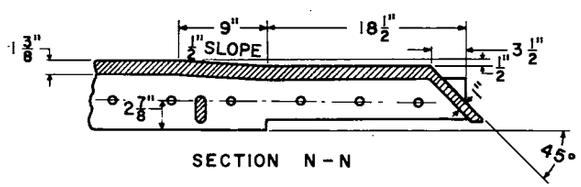
DETAIL OF TIE PLATES SHOWING WELDED STOPS



Nº1 PLATE ¾"x8"
Nº2 PLATE ¾"x8"
Nº3 PLATE ¾"x8"
Nº4 PLATE ¾"x8"
Nº5 PLATE ¾"x8"
Nº6 PLATE ¾"x8"
Nº7 PLATE ¾"x48"
Nº8 PLATE ¾"x8"
Nº9 PLATE ¾"x8"



SECTION M-M



SECTION N-N

Revised 6-73, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1808.1

A.R.E.A. PLAN 671-55

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 671-55 EXCEPT AS SHOWN.

2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS: (7-1-115), (7-2-115), (7-3-115) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.

3. THE THREE TIE HEEL PLATE TO BE 3/4" THICK WITH 3/4"x1"x10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.

USE OF THIS PLAN REQUIRES APPROVAL OF ASST. VICE PRESIDENT ENGINEERING.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 SOLID MANGANESE STEEL FROG

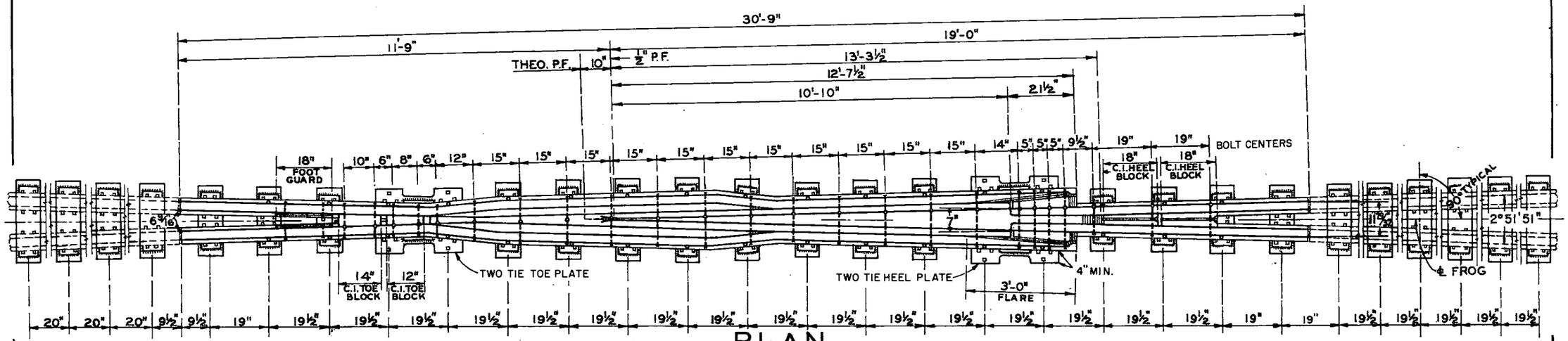
115 LB. R. E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1970

Recommended: B. G. Anderson — Asst. Vice President Engineering

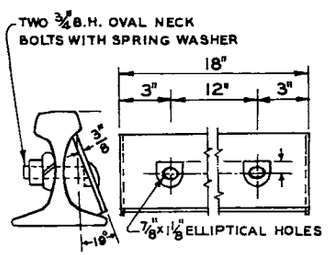
Approved: N. M. Lorentzen — Vice President, Operations

Dwg. Nº C-1808.2

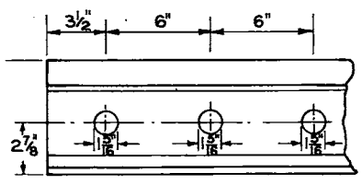


PLAN

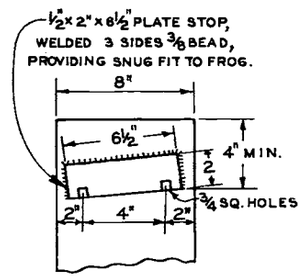
Nº 1	PLATE 3/4" × 8"
Nº 2	PLATE 3/4" × 8"
Nº 3	PLATE 3/4" × 8"
Nº 4	PLATE 3/4" × 8"
Nº 5	PLATE 3/4" × 8"
Nº 6	PLATE 3/4" × 8"
Nº 7	PLATE 3/4" × 8"
Nº 8	PLATE 3/4" × 28"
Nº 9	PLATE 3/4" × 8"
Nº 10	PLATE 3/4" × 8"
Nº 11	PLATE 3/4" × 8"
Nº 12	PLATE 3/4" × 8"
Nº 13	PLATE 3/4" × 8"
Nº 14	PLATE 3/4" × 8"
Nº 15	PLATE 3/4" × 8"
Nº 16	PLATE 3/4" × 8"
Nº 17	PLATE 3/4 × 28"
Nº 18	PLATE 3/4" × 8"
Nº 19	PLATE 3/4" × 8"
Nº 20	PLATE 3/4" × 8"
Nº 21	PLATE 3/4" × 8"
Nº 22	PLATE 3/4" × 8"
Nº 23	PLATE 3/4" × 8"
Nº 24	PLATE 3/4" × 8"
Nº 25	PLATE 3/4" × 8"
Nº 26	PLATE 3/4" × 8"
Nº 27	PLATE 3/4" × 8"



METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES.

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 625-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (20-1-115), (20-2-115) ETC. PLATES NUMBERED 6 THRU 20 SHALL BE SECURED TO FROG USING 3/4" RIVETS OR 5/8" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE TWO TIE TOE AND HEEL PLATES TO BE 3/4" THICK WITH 3/4" × 1" × 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 20 RAIL BOUND MANGANESE FROG
115 LB. R.E. RAIL

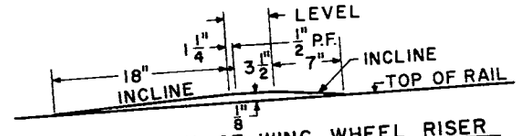
ENGINEERING DIVISION, ST. PAUL, MINN. JULY 22, 1970.

Recommended
B. H. Anderson
Asst. Vice President Engineering

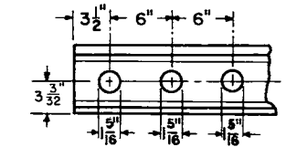
Approved
D. M. Lowenstein
Vice President Operations

Dwg. Nº C-1809.3

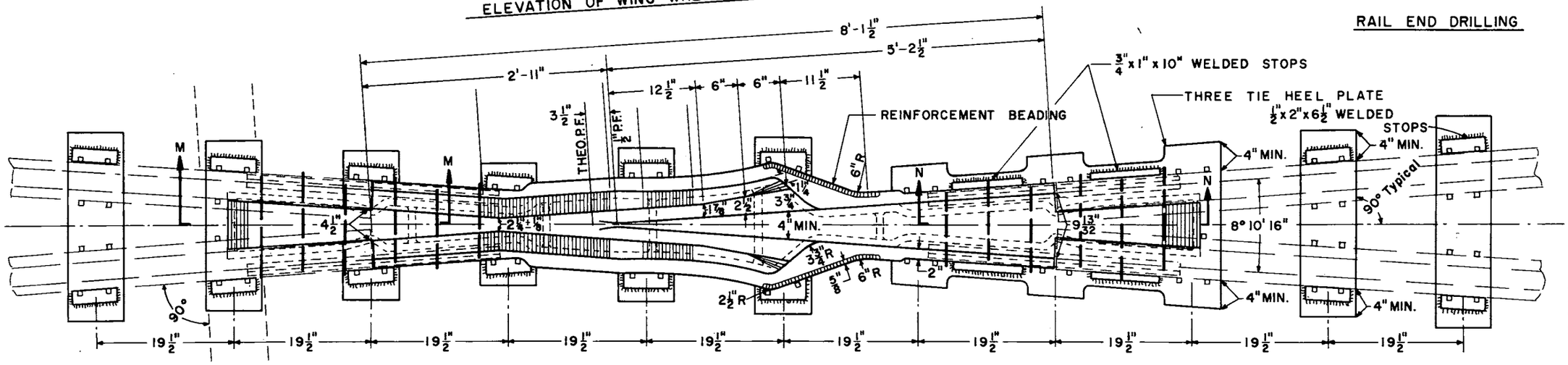
Revised 10-76, 6-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1809.2



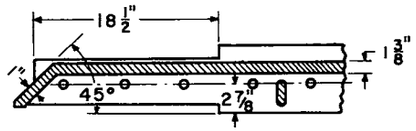
ELEVATION OF WING WHEEL RISER



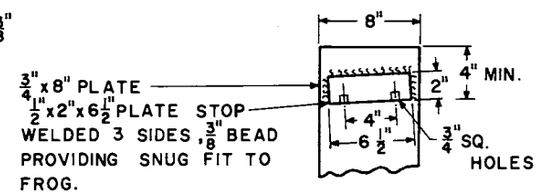
RAIL END DRILLING



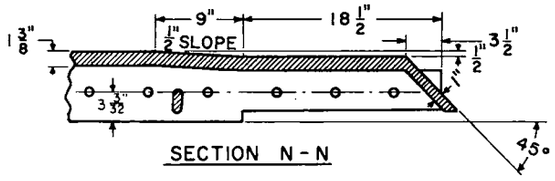
Nº 1 PLATE 3/4"x8"
Nº 2 PLATE 3/4"x8"
Nº 3 PLATE 3/4"x8"
Nº 4 PLATE 3/4"x8"
Nº 5 PLATE 3/4"x8"
Nº 6 PLATE 3/4"x8"
Nº 7 PLATE 3/4"x48"
Nº 8 PLATE 3/4"x8"
Nº 9 PLATE 3/4"x8"



SECTION M-M



DETAIL OF TIE PLATES SHOWING WELDED STOPS



SECTION N-N

Revised 10-80

THIS PLAN SUPERSEDES PLAN NO. C-1810.0

A.R.E.A. PLAN 671-55

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 671-55 EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS: (7-1-132), (7-2-132), (7-3-132) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.
3. THE THREE TIE HEEL PLATE TO BE 3/4" THICK WITH 3/4"x1"x10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 7 SOLID MANGANESE STEEL FROG

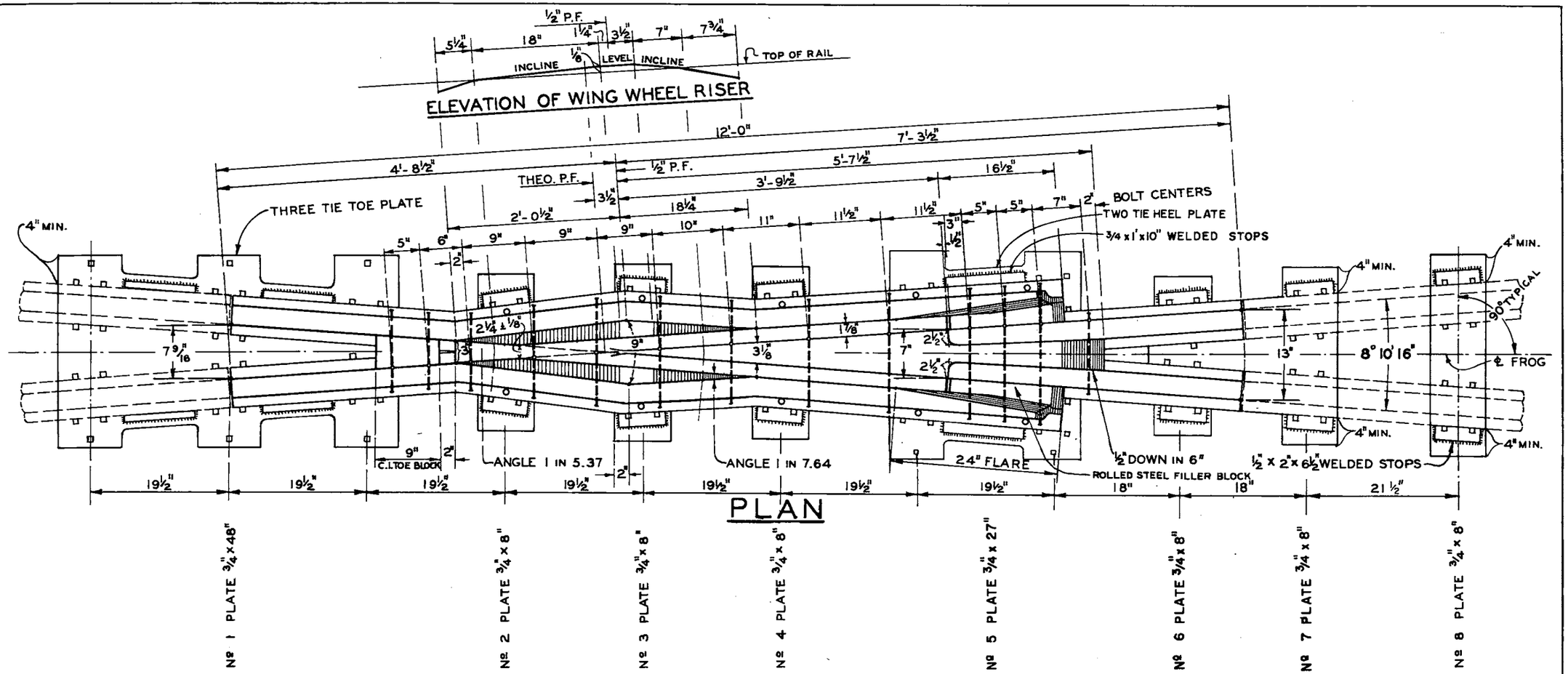
132 LB. R. E. RAIL

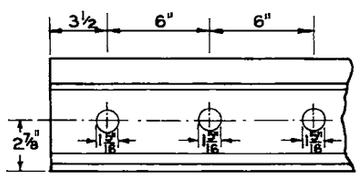
ENGINEERING DIVISION, ST. PAUL, MINN. JULY 31, 1970

Recommended — Asst. Vice President Engineering

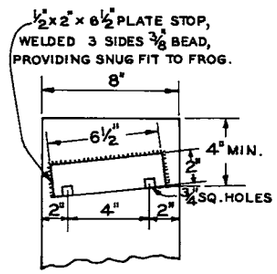
Approved — Vice President, Operations

Dwg. Nº C-1810.1





RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 622-55 EXCEPT AS SHOWN
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-115), (7-2-115) ETC. PLATES NUMBERED 2 THRU 5 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TIE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 RAIL BOUND MANGANESE FROG
115 LB. R.E. RAIL

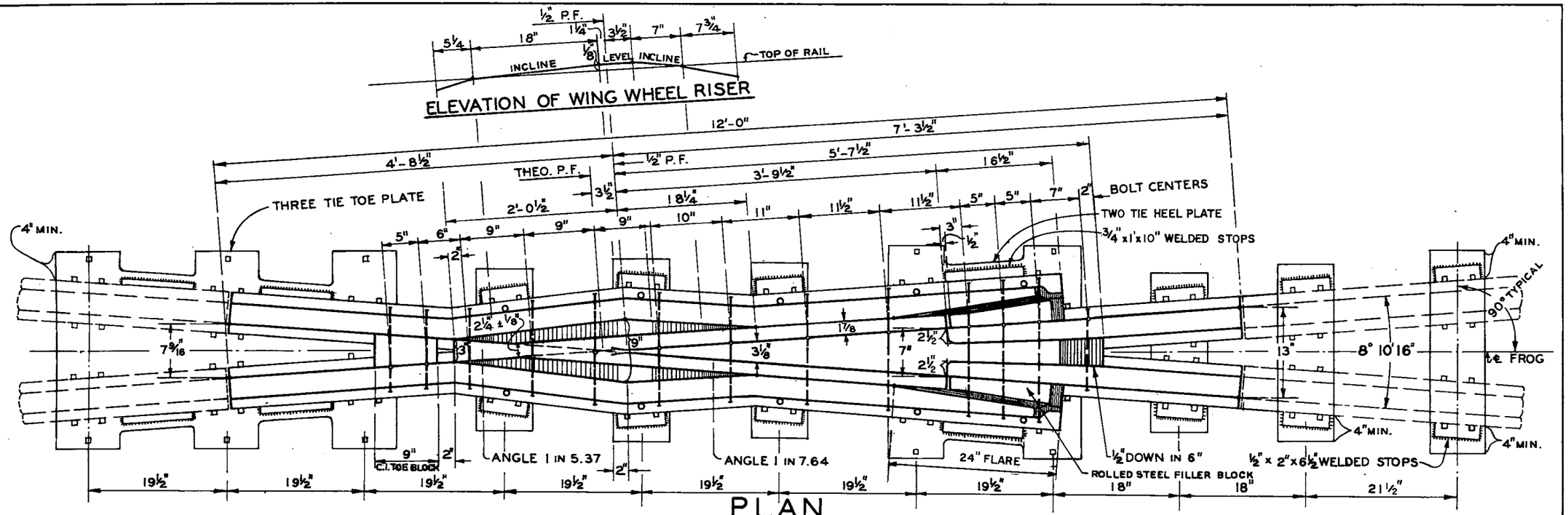
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971.

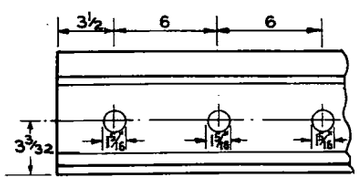
Recommended
Asst. Vice President Engineering

Approved
Vice President Operations

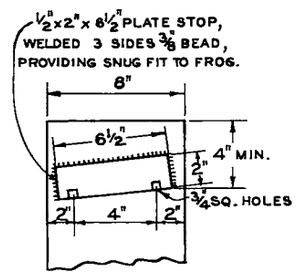
Revised 6-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1811.1

Dwg. Nº C-1811.2





RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 622-55 EXCEPT AS SHOWN
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-132),(7-2-132) ETC. PLATES NUMBERED 2 THRU 5 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TIE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 RAIL BOUND MANGANESE FROG
132 LB. R.E. RAIL

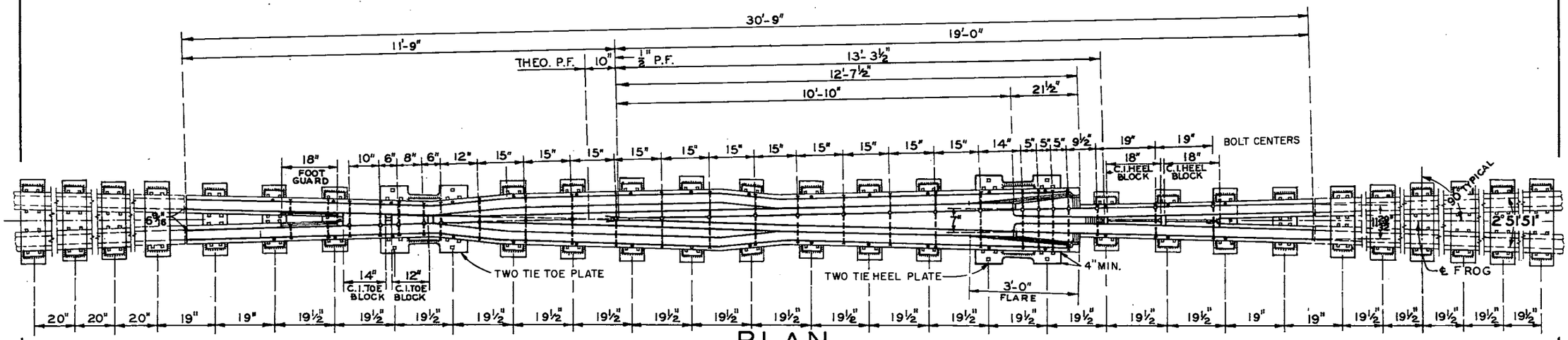
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

Recommended: Asst. Vice President Engineering

Approved: Vice President Operations

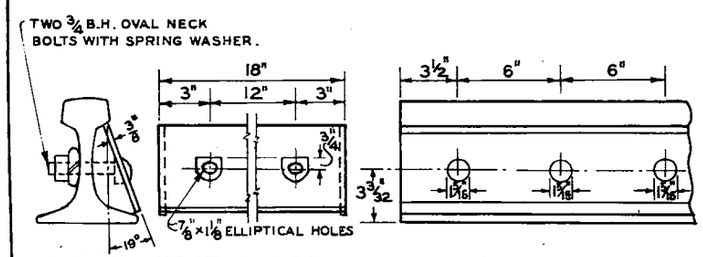
Dwg. Nº C-1812.2

Revised 7-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1812.1



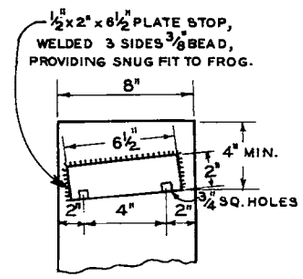
PLAN

Nº 1	PLATE 3/4" x 8"
Nº 2	PLATE 3/4" x 8"
Nº 3	PLATE 3/4" x 8"
Nº 4	PLATE 3/4" x 8"
Nº 5	PLATE 3/4" x 8"
Nº 6	PLATE 3/4" x 8"
Nº 7	PLATE 3/4" x 8"
Nº 8	PLATE 3/4" x 28"
Nº 9	PLATE 3/4" x 8"
Nº 10	PLATE 3/4" x 8"
Nº 11	PLATE 3/4" x 8"
Nº 12	PLATE 3/4" x 8"
Nº 13	PLATE 3/4" x 8"
Nº 14	PLATE 3/4" x 8"
Nº 15	PLATE 3/4" x 8"
Nº 16	PLATE 3/4" x 8"
Nº 17	PLATE 3/4" x 28"
Nº 18	PLATE 3/4" x 8"
Nº 19	PLATE 3/4" x 8"
Nº 20	PLATE 3/4" x 8"
Nº 21	PLATE 3/4" x 8"
Nº 22	PLATE 3/4" x 8"
Nº 23	PLATE 3/4" x 8"
Nº 24	PLATE 3/4" x 8"
Nº 25	PLATE 3/4" x 8"
Nº 26	PLATE 3/4" x 8"
Nº 27	PLATE 3/4" x 8"



METAL FOOT GUARD

RAIL END DRILLING



DETAIL OF TIE PLATES SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES.

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 625-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (20-1-132),(20-2-132)ETC. PLATES NUMBERED 6 THRU 20 SHALL BE SECURED TO FROG USING 3/4" RIVETS OR 5/8" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE TWO TIE TOE AND HEEL PLATES TO BE 3/4" THICK WITH 3/4" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 20 RAIL BOUND MANGANESE FROG
132 LB. R.E. RAIL

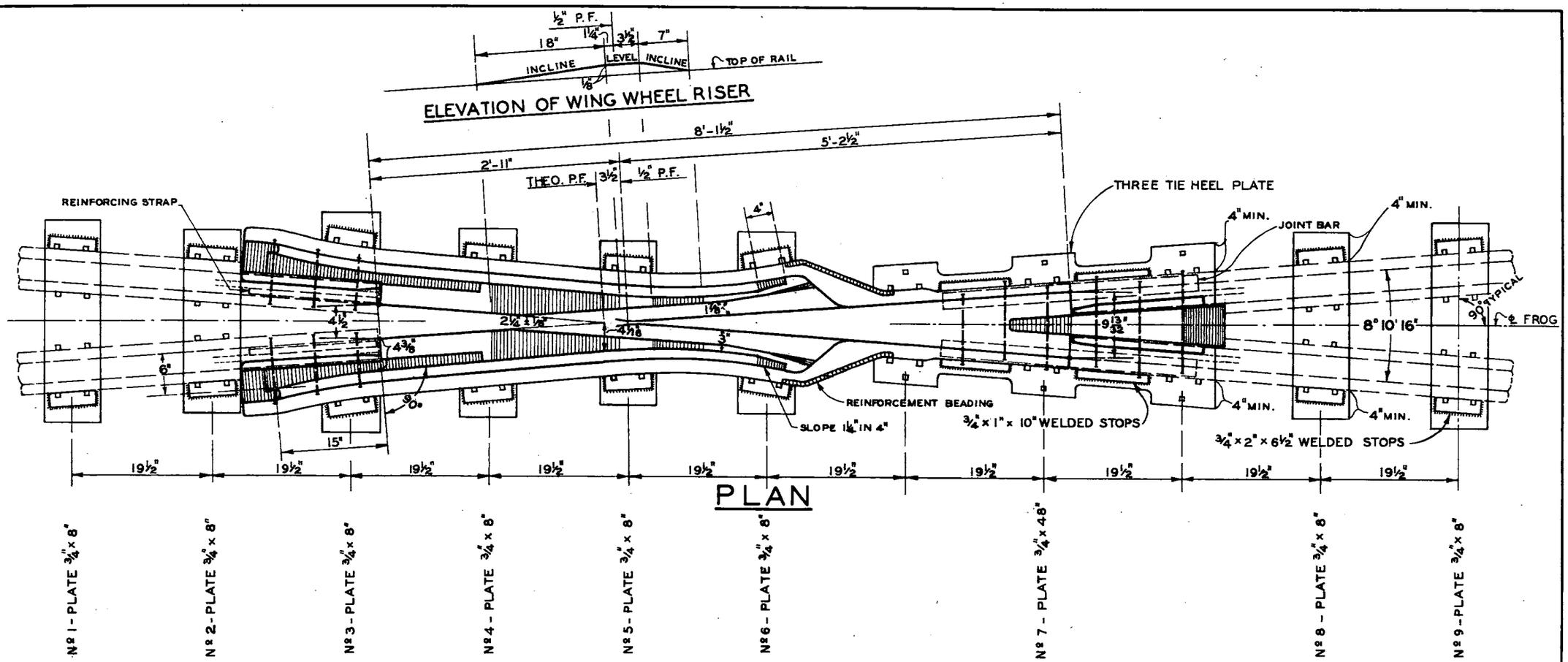
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 4, 1970.

Recommended: B. K. Anderson, Asst. Vice President Engineering

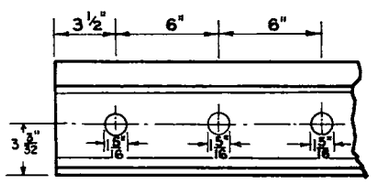
Approved: D. M. Countryman, Vice President Operations

Dwg. Nº C-1813.3

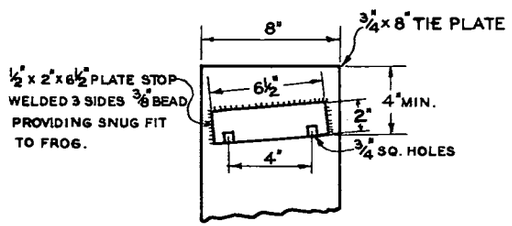
Revised 10-76, 7-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1813.2



Use of this frog requires approval of Asst. Vice President Engineering.



RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

A.R.E.A. PLAN 641-55

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A PLAN 641-55 EXCEPT AS SHOWN.

2. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-132), (7-2-132), (7-3-132) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.
3. THE THREE TIE HEEL PLATE TO BE ¾" THICK WITH ¾" × 1" × 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 SELF-GUARDED SOLID MANGANESE FROG

132 LB. R.E. RAIL

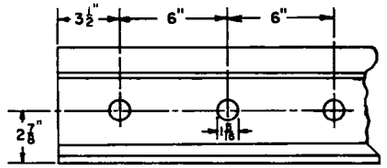
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 28, 1970.

R. H. Anderson
Asst. Vice President Engineering

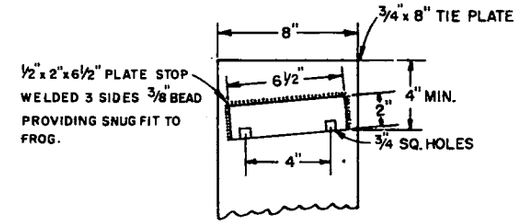
D. M. Horentzen
Vice President Operations

Revised 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1815.0

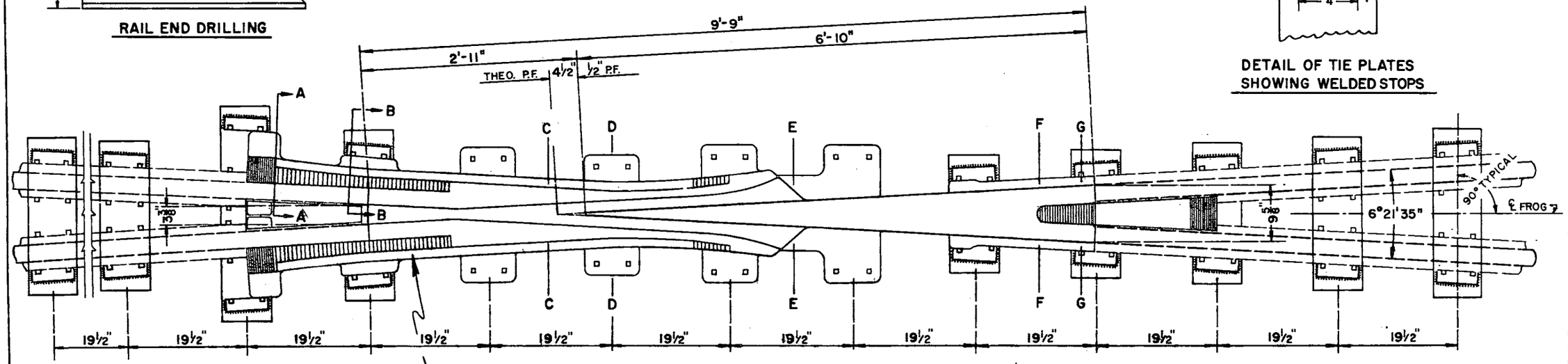
Dwg. Nº C-1815.1

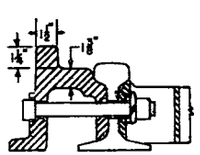


RAIL END DRILLING

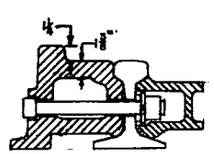


DETAIL OF TIE PLATES SHOWING WELDED STOPS

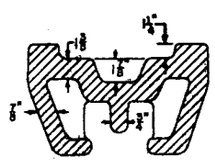




SECTION A-A



SECTION B-B



SECTION C-C
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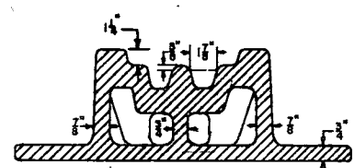
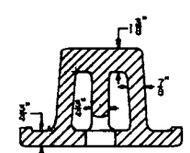
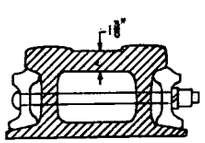


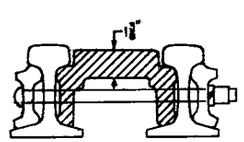
SECTION D-D



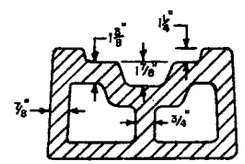
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-115) (9-2-115) ETC. ALL SPIKE HOLES TO BE ¾" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. SPEC. 7(a) TO BE FURNISHED BY MFG.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 115 LB. R.E. RAIL

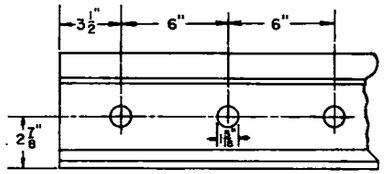
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971.

Recommended: B. H. Anderson — Asst. Vice President Engineering

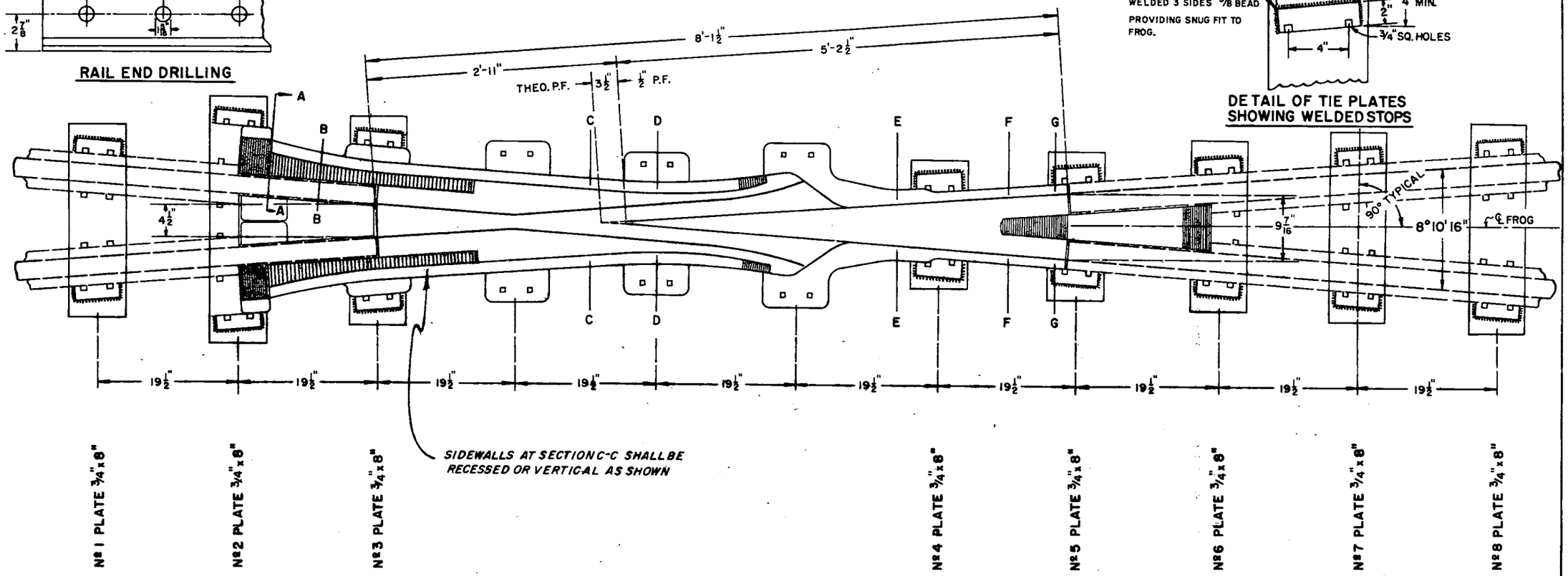
Approved: W. M. Countryman — Vice President, Operations

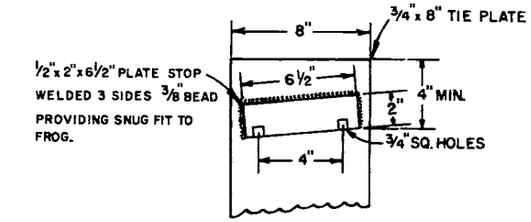
Revised 7-78, 2-80
THIS PLAN SUPERSEDES PLAN NO. C-1816.1

Dwg. Nº C-1816.2

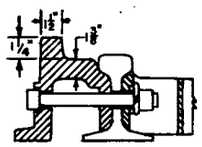


RAIL END DRILLING

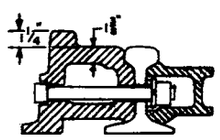




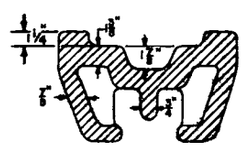
DETAIL OF TIE PLATES SHOWING WELDED STOPS



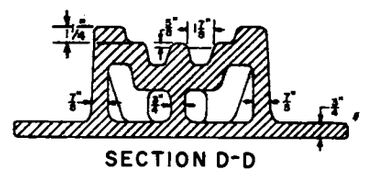
SECTION A-A



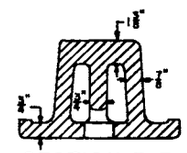
SECTION B-B



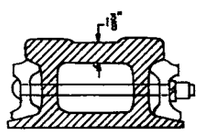
SECTION C-C
(RECESSED)



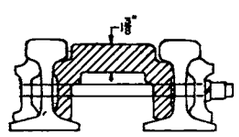
SECTION D-D



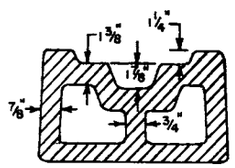
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-115) (7-2-115) ETC. ALL SPIKE HOLES TO BE ¾" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. ~~SPEC.~~ 7(c) TO BE FURNISHED BY MFG.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 115 LB. R.E. RAIL

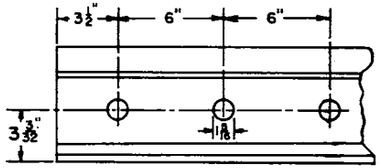
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971.

Recommended: B. H. Anderson — Asst. Vice President Engineering

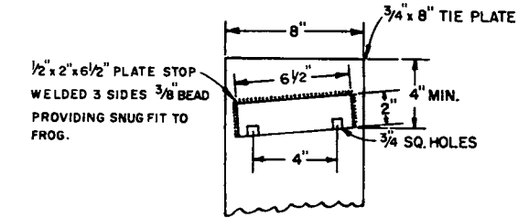
Approved: N. M. Lowenstein — Vice President, Operations

Revised 2,80
THIS PLAN SUPERSEDES PLAN NO. C-1817,0

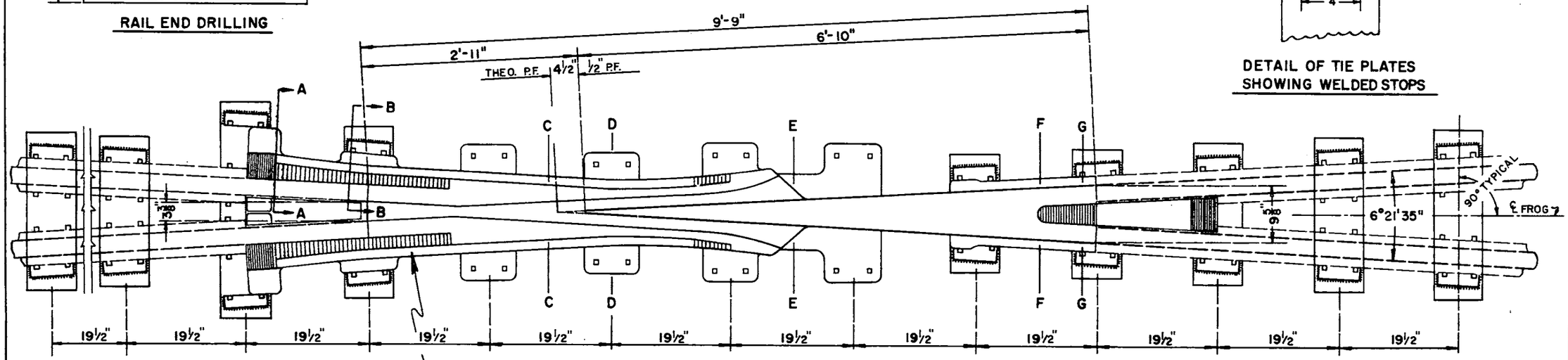
Dwg. Nº C-1817.1

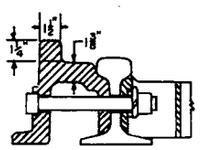


RAIL END DRILLING

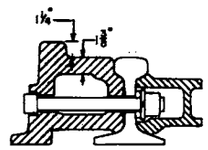


DETAIL OF TIE PLATES SHOWING WELDED STOPS

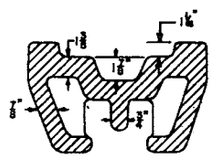




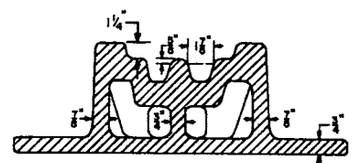
SECTION A-A



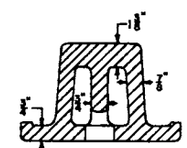
SECTION B-B



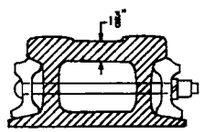
SECTION C-C
(RECESSED)



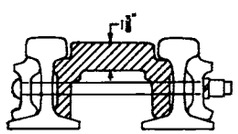
SECTION D-D



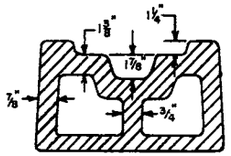
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-115) (9-2-115) ETC. ALL SPIKE HOLES TO BE 3/4" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. SPEC. 7(c) TO BE FURNISHED BY MFG.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 132 LB. R.E. RAIL

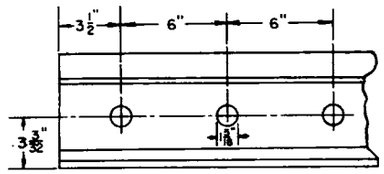
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971.

Recommended: B. G. Anderson, Asst. Vice President Engineering

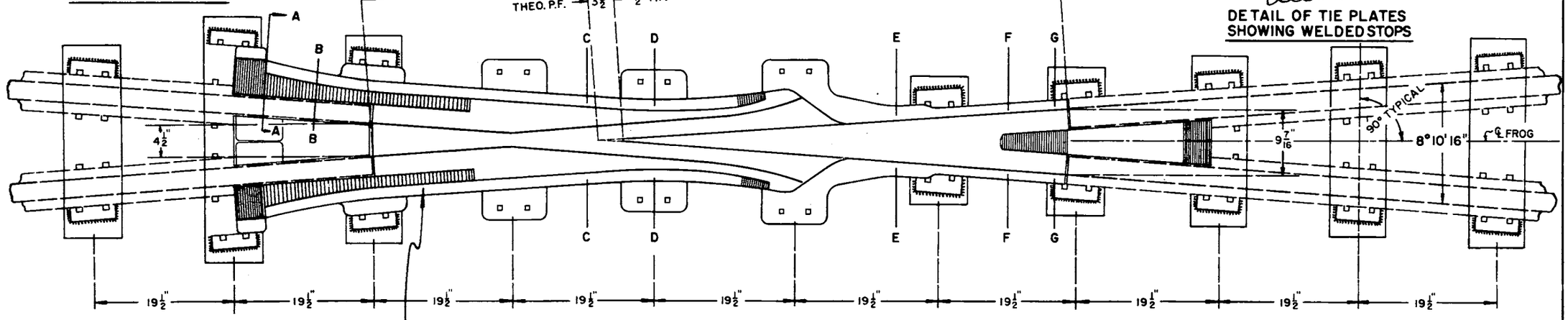
Approved: R. M. Countryman, Vice President, Operations

Revised 7-78, 2-80
THIS PLAN SUPERSEDES PLAN NO. C-1818.1

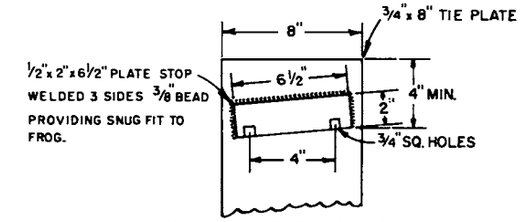
Dwg. Nº C-1818.2



RAIL END DRILLING



SIDEWALLS AT SECTION C-C SHALL BE RECESSED OR VERTICAL AS SHOWN



DETAIL OF TIE PLATES SHOWING WELDED STOPS

Nº 1 PLATE ¾" x 8"

Nº 2 PLATE ¾" x 8"

Nº 3 PLATE ¾" x 8"

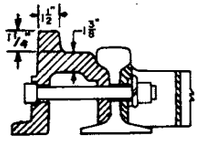
Nº 4 PLATE ¾" x 8"

Nº 5 PLATE ¾" x 8"

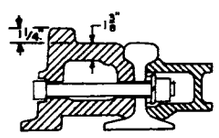
Nº 6 PLATE ¾" x 8"

Nº 7 PLATE ¾" x 8"

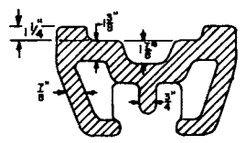
Nº 8 PLATE ¾" x 8"



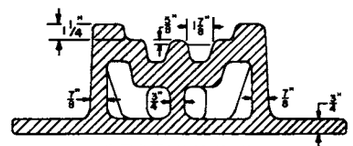
SECTION A-A



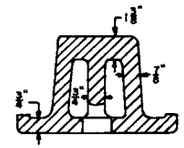
SECTION B-B



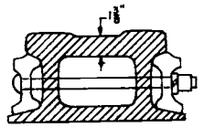
SECTION C-C
(RECESSED)



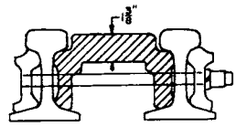
SECTION D-D



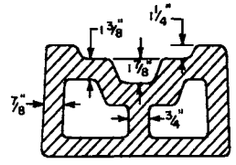
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-132) (7-2-132) ETC. ALL SPIKE HOLES TO BE ¾" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. SPEC. 7(a) TO BE FURNISHED BY MFG.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 7 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 132 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1971.

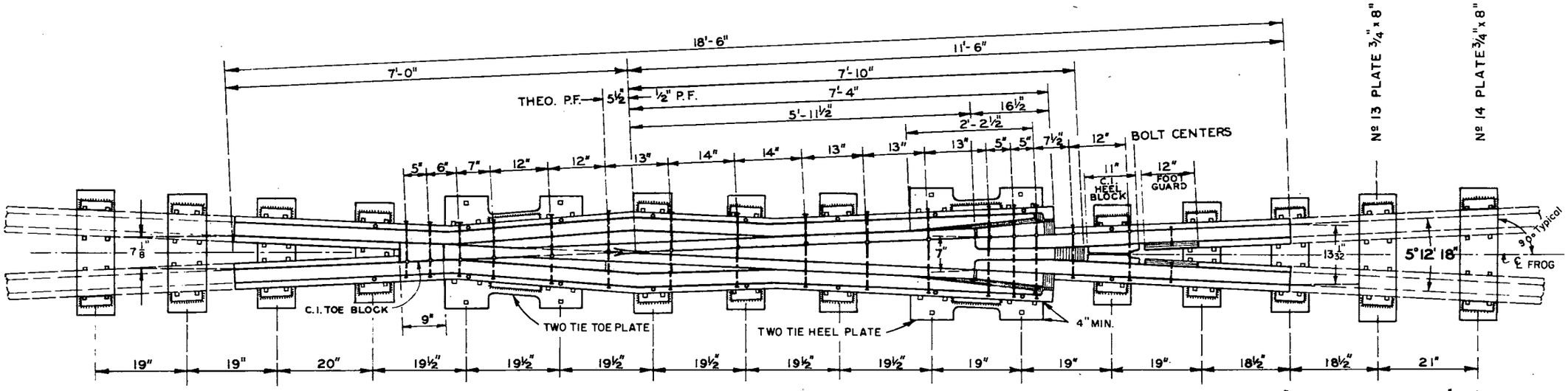
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: N. M. Kornstedt, Vice President, Operations

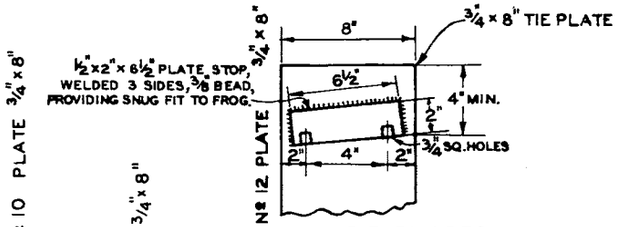
Revised 2,80

THIS PLAN SUPERSEDES PLAN NO. C-1819.0

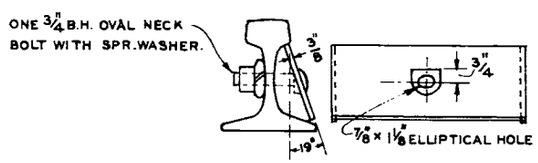
Dwg. Nº C-1819.1



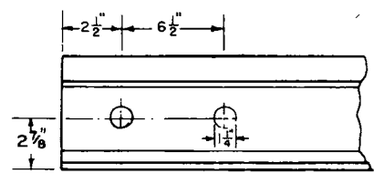
Nº 1 PLATE ¾" x 8"
Nº 2 PLATE ¾" x 8"
Nº 3 PLATE ¾" x 8"
Nº 4 PLATE ¾" x 8"
Nº 5 PLATE ¾" x 28"
Nº 6 PLATE ¾" x 8"
Nº 7 PLATE ¾" x 8"
Nº 8 PLATE ¾" x 8"
Nº 9 PLATE ¾" x 28"
Nº 10 PLATE ¾" x 8"
Nº 11 PLATE ¾" x 8"
Nº 12 PLATE ¾" x 8"



DETAIL OF TIE PLATES
SHOWING WELDED STOPS



METAL FOOT GUARD



RAIL END DRILLING

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOW.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (11-1-112), (11-2-112) ETC. PLATES NUMBERED 4 THRU 10 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600 B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 11 RAIL BOUND MANGANESE FROG
112 LB. R.E. RAIL

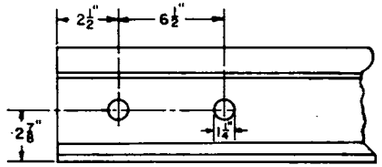
ENGINEERING DIVISION. ST. PAUL, MINN. NOV. 1971.

Recommended: R. H. Anderson — Asst Vice President Engineering

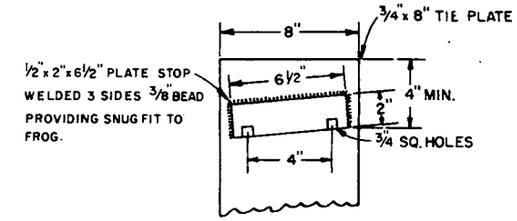
Approved: [illegible] — Vice President Operations

Revised 7-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1820.1

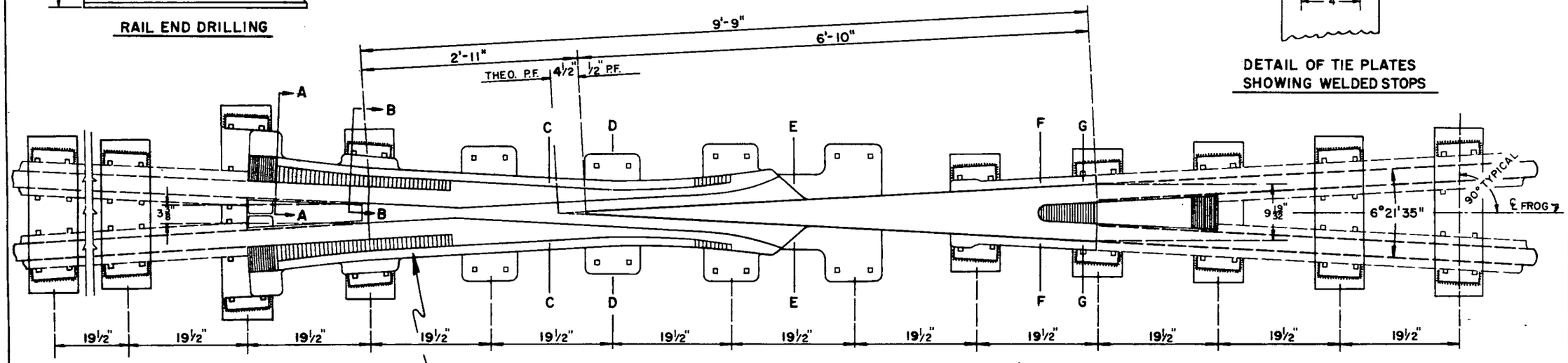
Dwg. Nº C-1820.2



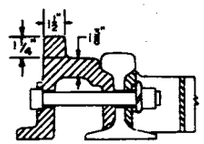
RAIL END DRILLING



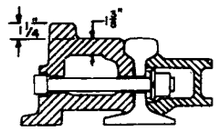
DETAIL OF TIE PLATES SHOWING WELDED STOPS



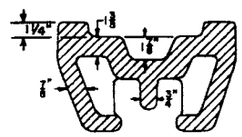
Nº 1 PLATE ¾" x 8"
Nº 2 PLATE ¾" x 8"
Nº 3 PLATE ¾" x 8"
Nº 4 PLATE ¾" x 8"
Nº 5 PLATE ¾" x 8"
Nº 6 PLATE ¾" x 8"
Nº 7 PLATE ¾" x 8"
Nº 8 PLATE ¾" x 8"
Nº 9 PLATE ¾" x 8"



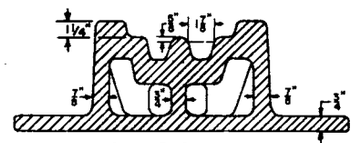
SECTION A-A



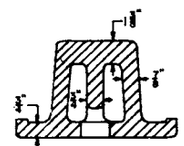
SECTION B-B



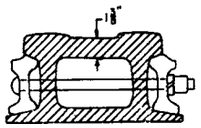
SECTION C-C
(RECESSED)



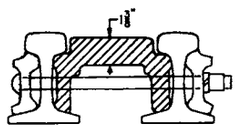
SECTION D-D



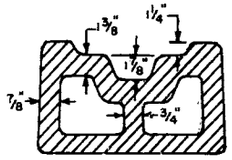
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-112), (9-2-112) ETC. ALL SPIKE HOLES TO BE ¾" SQUARE.
3. ADJUSTABLE [illegible] PER A.R.E.A. SPEC. 7(a) TO BE FURNISHED BY MFG.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 112 LB. R.E. RAIL

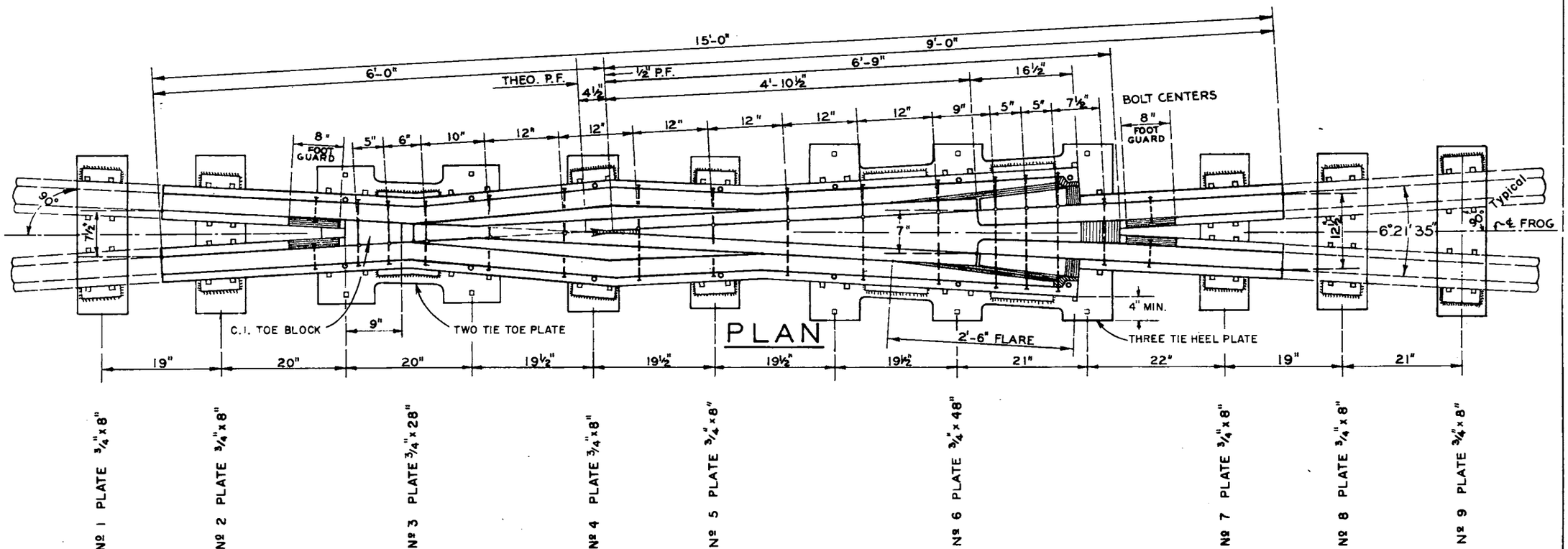
ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971.

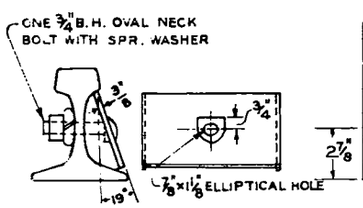
Recommended: Asst. Vice President Engineering

Approved: Vice President, Operations

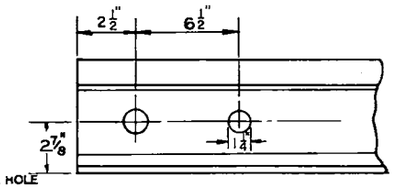
Revised 7-73, 2-80
THIS PLAN SUPERSEDES PLAN NO. C-1821.1

Dwg. Nº C-1821.2

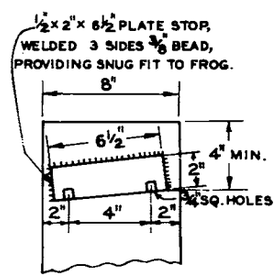




METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-112), (9-2-112) ETC. PLATES NUMBERED 3 THRU 6 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 RAIL BOUND MANGANESE FROG
112 LB. R.E. RAIL

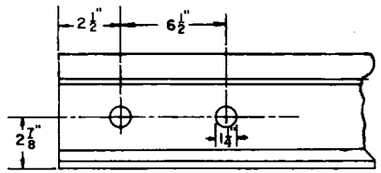
ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1972

Recommended: B.H. Anderson, Asst. Vice President Engineering

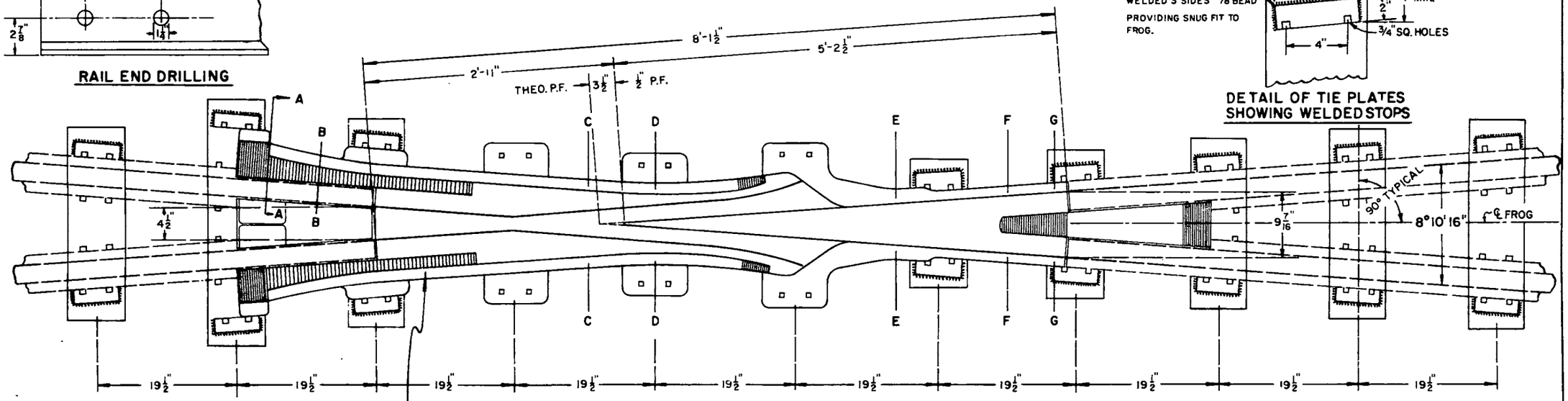
Approved: Vice President Operations

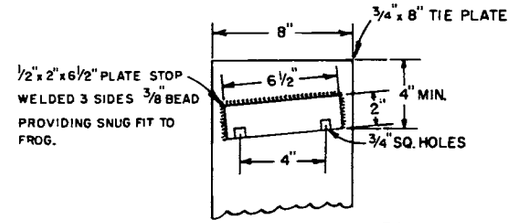
Dwg. Nº C-1822.3

Revised 10-76, 7-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1822.2

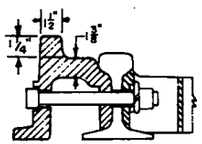


RAIL END DRILLING

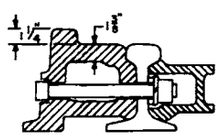




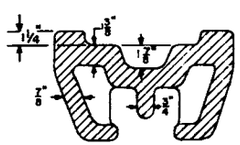
DETAIL OF TIE PLATES SHOWING WELDED STOPS



SECTION A-A

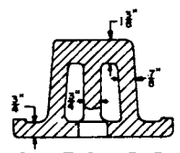


SECTION B-B

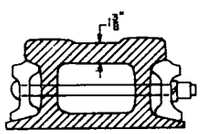


SECTION C-C
(RECESSED)

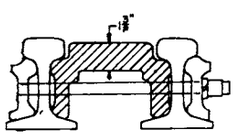
SECTION D-D



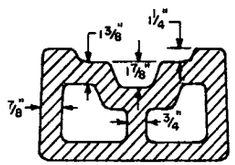
SECTION E-E



SECTION F-F



SECTION G-G



SECTION C-C
(VERTICAL)

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (7-1-112) (7-2-112) ETC. ALL SPIKE HOLES TO BE ¾" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. SPEC. 7(a) TO BE FURNISHED BY MFG.

Use of this frog requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 SOLID MANG. SELF GUARDED FROG
INTEGRAL BASE WITH EXTENDED TIE PADS
112 LB. R.E. RAIL

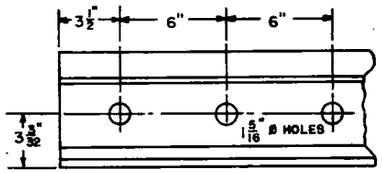
ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1971.

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

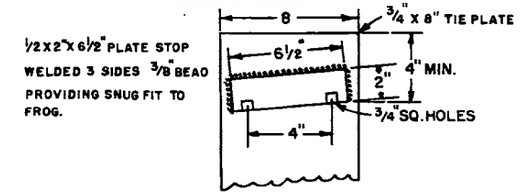
Dwg. Nº C-1823.1

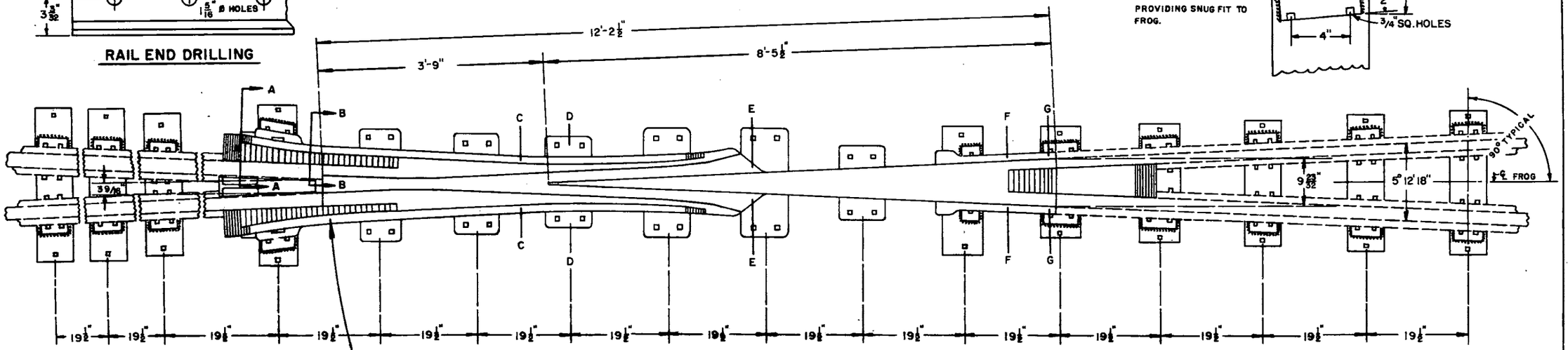
Revised 2,80
THIS PLAN SUPERSEDES PLAN NO. C-1823.0

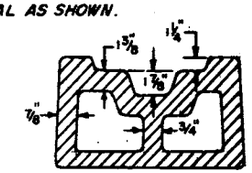


RAIL END DRILLING

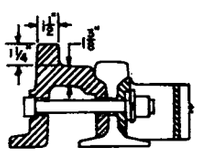
DETAIL OF TIE PLATES SHOWING WELDED STOPS



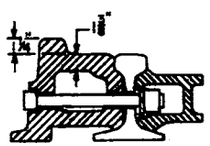




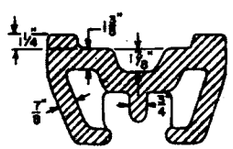
SECTION C-C
(VERTICAL)



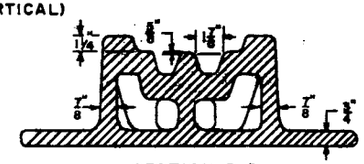
SECTION A-A



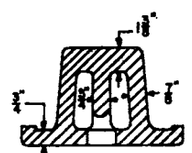
SECTION B-B



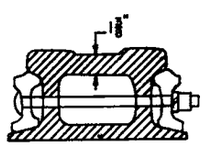
SECTION C-C
(RECESSED)



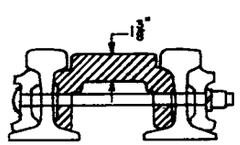
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (11-1-132) (11-2-132) ETC. ALL SPIKE HOLES TO BE 3/4" SQUARE.
3. ADJUSTABLE TOE BLOCK PER [redacted] SPEC. 7(a) TO BE FURNISHED BY MFG.

BURLINGTON NORTHERN INC.
SPECIAL PLAN

NO. 11 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 132 LB. R.E. RAIL

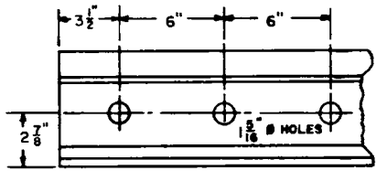
ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1972

Recommended: B. F. Anderson — Asst. Vice President Engineering

Approved: J. C. B. Thompson — Vice President, Operations

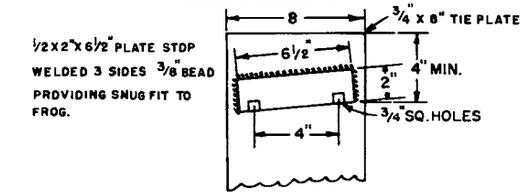
Revised 2,80
THIS PLAN SUPERSEDES PLAN NO. C-1824.0

Dwg. Nº C-1824.1

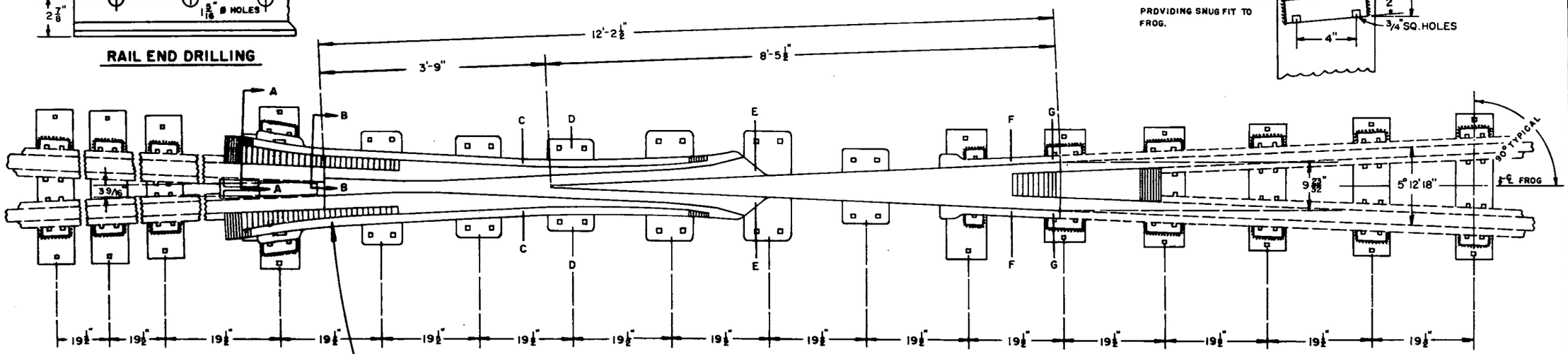


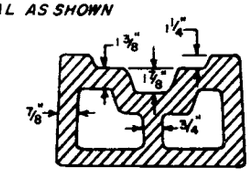
RAIL END DRILLING

DETAIL OF TIE PLATES SHOWING WELDED STOPS

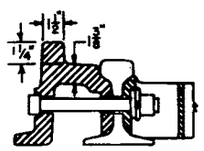


½ x 2" x 6½" PLATE STOP WELDED 3 SIDES 3/8" BEAD PROVIDING SNUG FIT TO FROG.

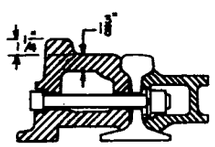




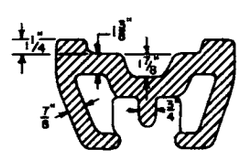
SECTION C-C (VERTICAL)



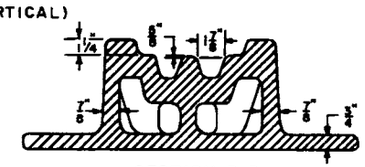
SECTION A-A



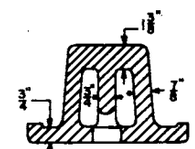
SECTION B-B



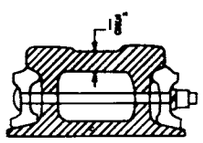
SECTION C-C (RECESSED)



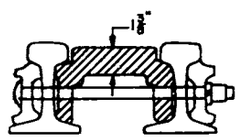
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. SPECIFICATIONS EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (11-1-115) (11-2-115) ETC. ALL SPIKE HOLES TO BE 3/4" SQUARE.
3. ADJUSTABLE TOE BLOCK PER A.R.E.A. SPEC. 7(a) TO BE FURNISHED BY MFG.

BURLINGTON NORTHERN INC.
SPECIAL PLAN

NO. 11 SOLID MANG. SELF GUARDED FROG INTEGRAL BASE WITH EXTENDED TIE PADS 115 LB. R.E. RAIL

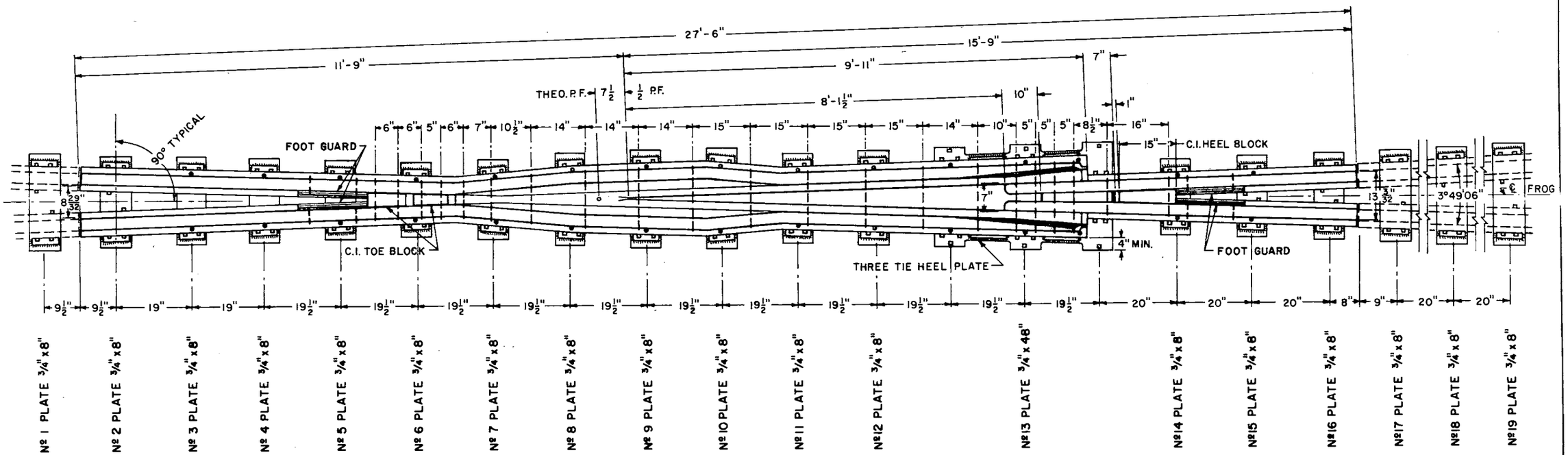
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1973

Recommended — Asst. Vice President Engineering

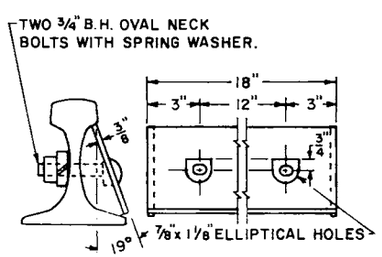
Approved — Vice President, Operations

Revised 2,80
THIS PLAN SUPERSEDES PLAN NO. C-1825.0

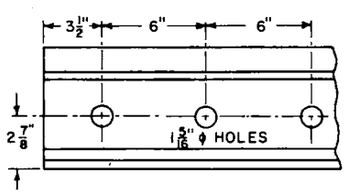
Dwg. Nº C-1825.1



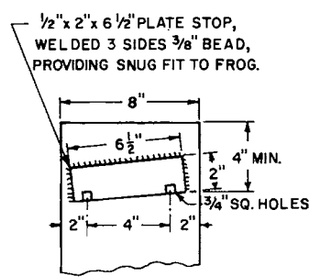
Use of this frog requires approval of Asst. Vice President Engineering.



METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES SHOWING WELDED STOPS

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-59 AND 624-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (15-1-115),(15-2-115) ETC. PLATES NUMBERED 3 THRU 15 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE THREE TIE HEEL PLATE TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 15 RAILBOUND MANGANESE FROG

115 LB. R.E. RAIL

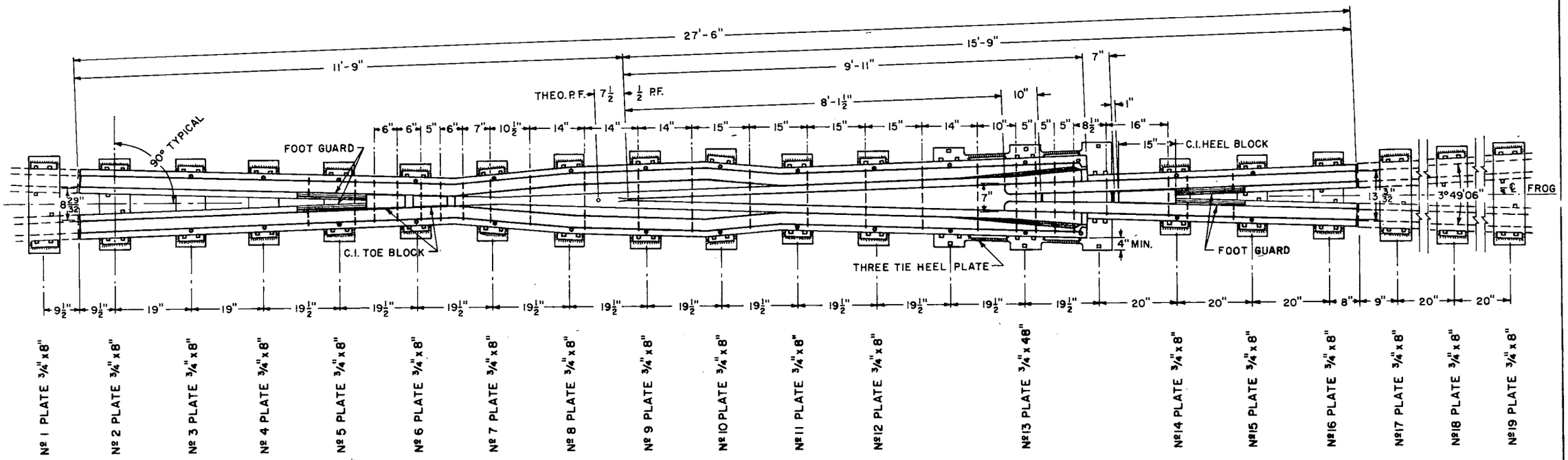
ENGINEERING DIVISION, ST. PAUL, MINN JULY 1975

Recommended: B.H. Anderson — Asst. Vice President Engineering

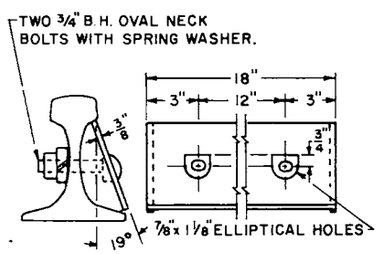
Approved: J.C. Livingston — Vice President, Operations

Revised 10-76, 7-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1827.2

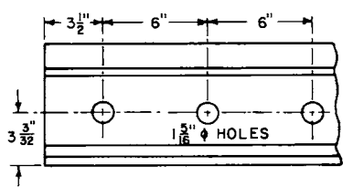
Dwg № C-1827.3



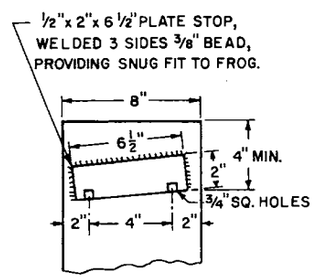
Use of this frog requires approval of Asst. Vice President Engineering.



METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES SHOWING WELDED STOPS

GENERAL NOTES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-59 AND 624-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (15-1-132),(15-2-132)ETC. PLATES NUMBERED 3 THRU 15 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE THREE TIE HEEL PLATE TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 15 RAILBOUND MANGANESE FROG

132 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN JULY 1975

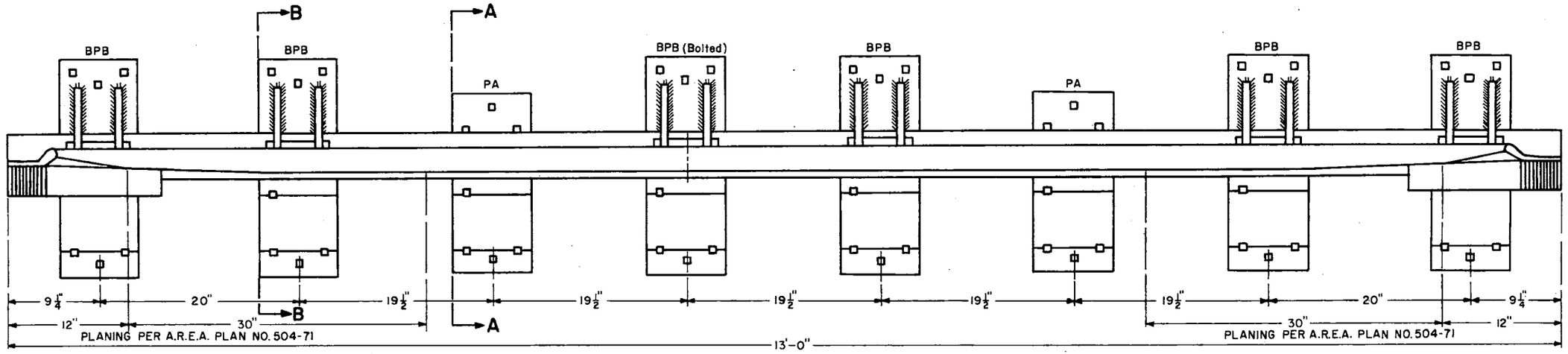
Recommended: B.H. Anderson — Asst. Vice President Engineering

Approved: J.R. Livingston — Vice President, Operations

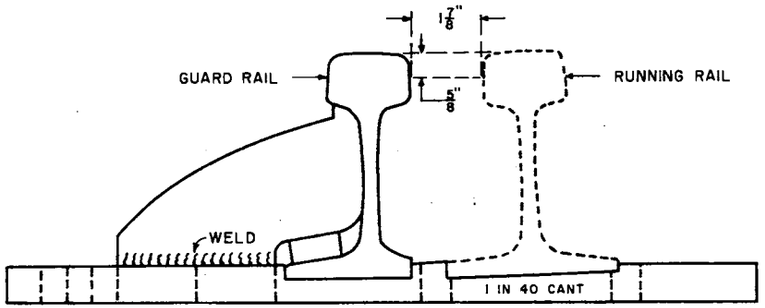
Dwg Nº C-1828.3

Revised 10 76 7-78, 10-80

THIS PLAN SUPERSEDES PLAN NO. C-1828.2

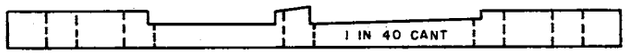


BRACE PLATE B



SECTION "B-B"

TIE PLATE A



SECTION "A-A"

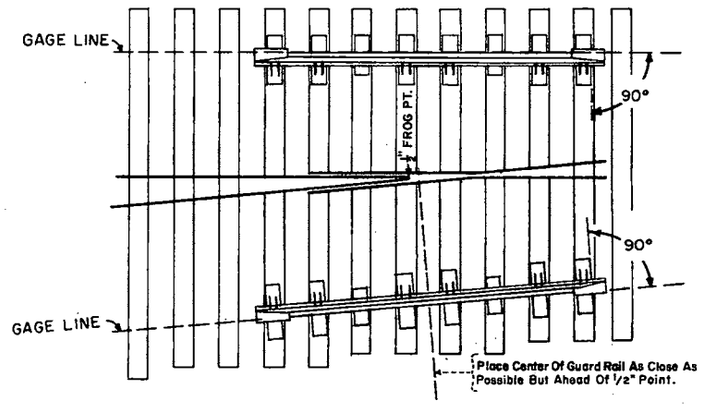


DIAGRAM SHOWING SETTING OF GUARD RAIL

NOTE:

FLANGEWAY CLEARANCE AND TIE SPACING SHALL BE AS SHOWN FOR ALL RAIL SECTIONS

H.T. BOLTS FOR BRACE PLATES TO HAVE SPECIAL HEX. NUTS (PART NO. 29UTA1187 MACLEAN FOGG LOCKNUT CO.)

STATE RAIL SECTION WHEN ORDERING.

BURLINGTON NORTHERN INC.
STANDARD PLAN

13 FT. RACOR EPG-2 GUARD RAIL

115 LB. R.E. AND 132 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1970

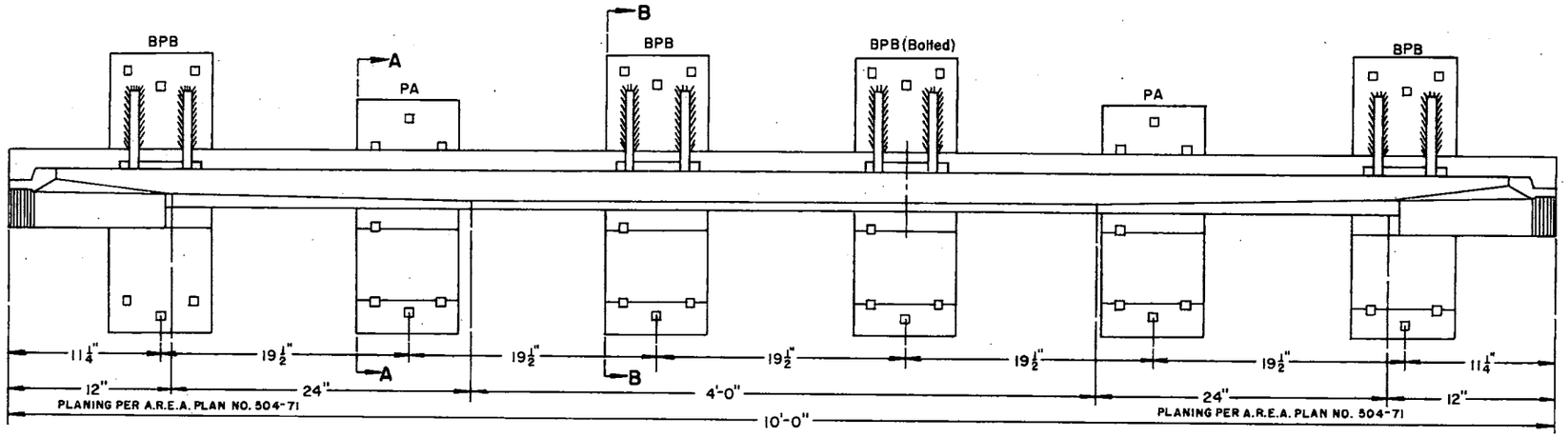
Recommended
F. A. Kempe
Director Track Engineering

Approved
N. M. Lowenstein
Vice President, Operations

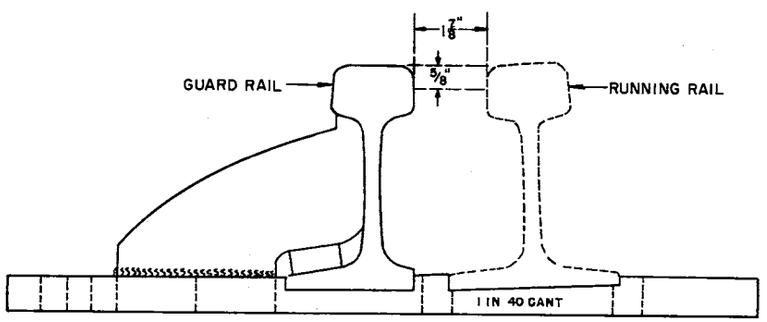
B. H. Anderson
Asst. Vice President Engineering

Dwg Nº C-2000.3

Revised 6-73, 10-76, 6-81
THIS PLAN SUPERSEDES PLAN NO. C-2000.2



BRACE PLATE B



SECTION "B-B"

TIE PLATE A

SECTION "A-A"

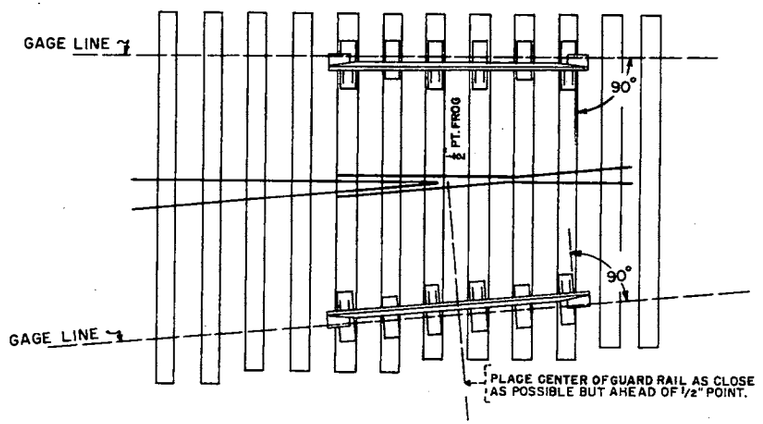


DIAGRAM SHOWING SETTING OF GUARD RAIL

NOTE:

FLANGEWAY CLEARANCE AND TIE SPACING SHALL BE AS SHOWN FOR ALL RAIL SECTIONS.

H.T. BOLTS FOR BRACE PLATES TO HAVE SPECIAL HEX NUTS (PART NO. 29 UTA 1187 MACLEAN FOGG LOCKNUT CO.)

STATE RAIL SECTION WHEN ORDERING.

USE 90LB R.A. GUARD RAIL WITH THE FOLLOWING RUNNING RAILS.

(RUNNING RAILS)

100 LB. R.B.	90 LB. R.B.	90LB. G.N.	85LB. C.B. & Q.
100 LB. G.N.	90 LB. R.A.	85LB. G.N.	85LB. A.S.C.E.

USE 100LB. R.A. GUARD RAIL WITH THE FOLLOWING RUNNING RAILS.

(RUNNING RAILS)

100 LB. R.E.	100LB. R.A.	100LB. A.S.C.E.

BURLINGTON NORTHERN INC.
STANDARD PLAN

10 FT. RACOR EPG-2 GUARD RAIL

(FOR USE WITH 85 LB. THRU 100 LB. RAIL)

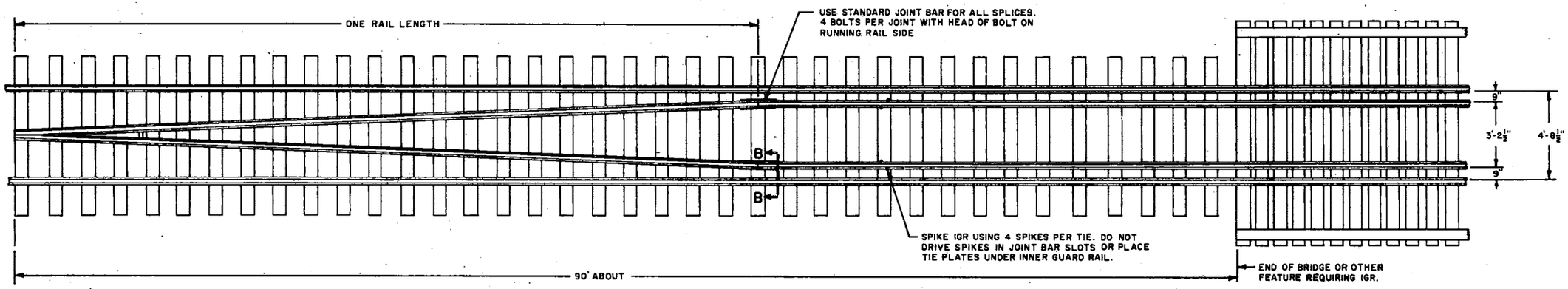
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1973

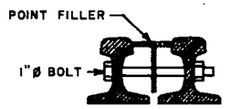
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: K. B. Livingston, Vice President Operations

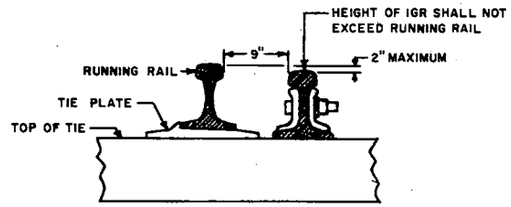
Revised 5-75, 6-81
THIS PLAN SUPERSEDES PLAN NO. C-2003.1

Dwg. Nº C-2003.2





SECTION A-A



SECTION B-B

NOTE:

INNER GUARD RAIL SHALL BE INSTALLED ON MAIN AND PASSING TRACKS ON NEW CONSTRUCTION OR RECONSTRUCTION AS FOLLOWS:

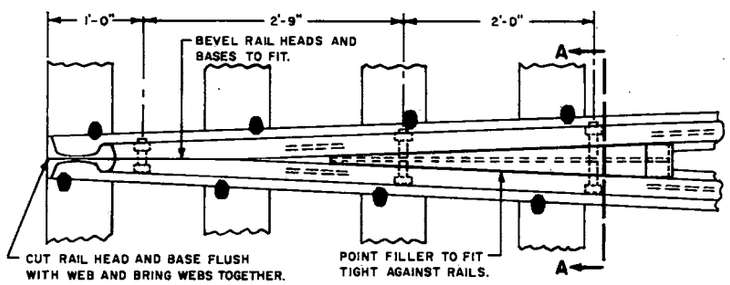
ON ALL THRU TYPE BRIDGES.

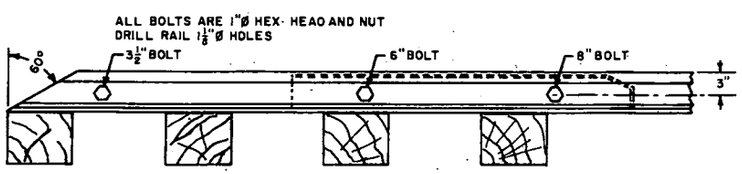
ON ALL DECK TYPE BRIDGES OVER 200' LONG OR 30' HIGH.

BENEATH OVERHEAD BRIDGES WHERE RUNNING RAIL IS LESS THAN 10' FROM PIER OR BRIDGE SUPPORT.

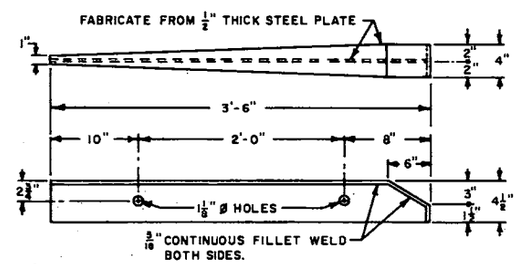
IN TIMBER LINED TUNNELS, ON BRIDGES LOCATED ON SHARP CURVED ALIGNMENT AND IN OTHER SPECIAL CASES ON APPROVAL OF ASST. VICE PRESIDENT ENGINEERING.

ON BALLASTED DECK BRIDGES HAVING TWO OR MORE TRACKS OR BENEATH OVERHEAD BRIDGES WHERE CLOSE CLEARANCE IS LIMITED TO ONE SIDE, ONLY ONE GUARD RAIL NEED BE PLACED UPON APPROVAL OF ASST. VICE PRESIDENT ENGINEERING.





DETAIL OF POINT



DETAIL OF POINT FILLER

(EST. WT. = 41 LBS.)

BURLINGTON NORTHERN INC.
STANDARD PLAN

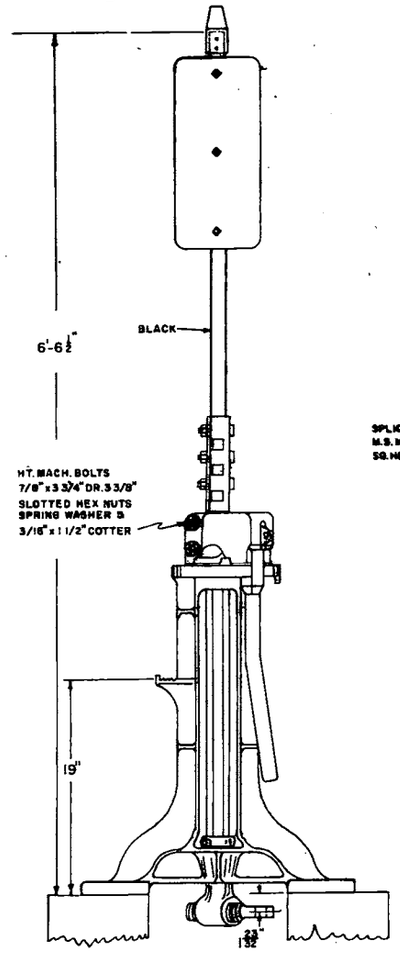
INNER GUARD RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1979

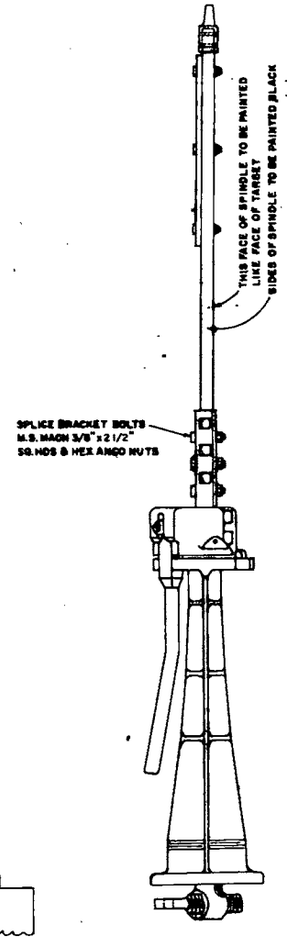
Recommended: B. H. Anderson, Asst. Vice President Engineering

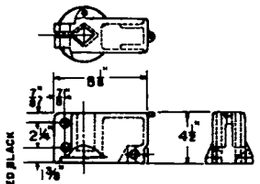
Approved: Sr. Vice President, Operations

Dwg. № C-2010.0

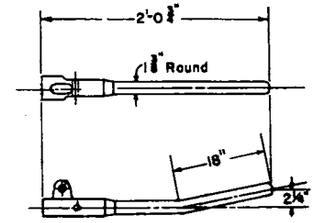


ELEVATION

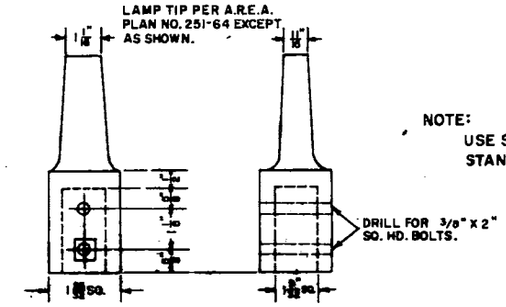




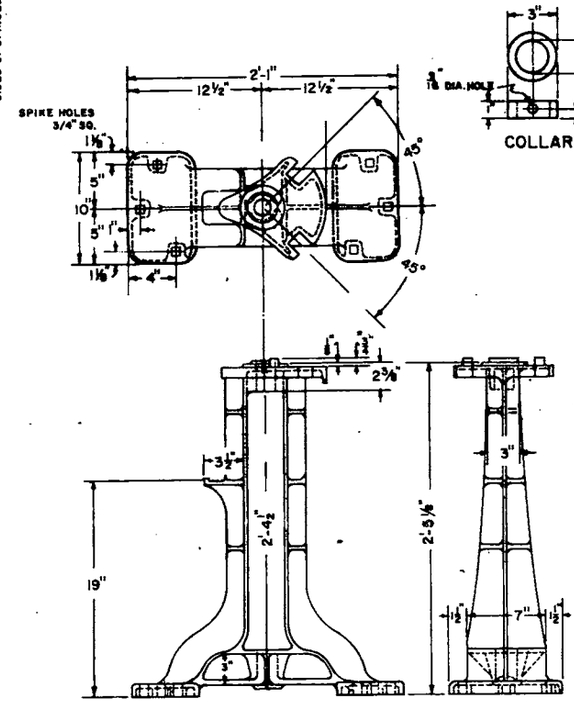
LEVER BRACKET



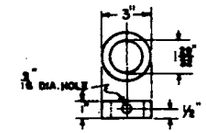
HAND LEVER



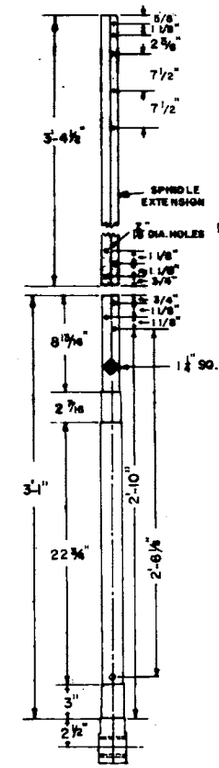
NOTE:
USE STYLE Nº 1 CONNECTING ROD PER B.N.INC.
STANDARD PLAN Nº C-2156.0.



MAIN CASTING

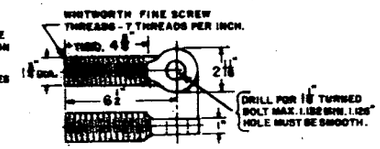


COLLAR



SPINDLE

SPLICE BRACKET



CRANK EYE

NOTE:
SWITCH STAND SHALL BE FASTENED TO H.B. TIES
USING 5/8" x 7" SCREWDRIVE SPIKES. PREBORE
1/2" DIA. HOLES.

BURLINGTON NORTHERN INC.
STANDARD PLAN

RACOR STYLE 112G SWITCH STAND

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended

F. A. Kempe
Director Track Engineering

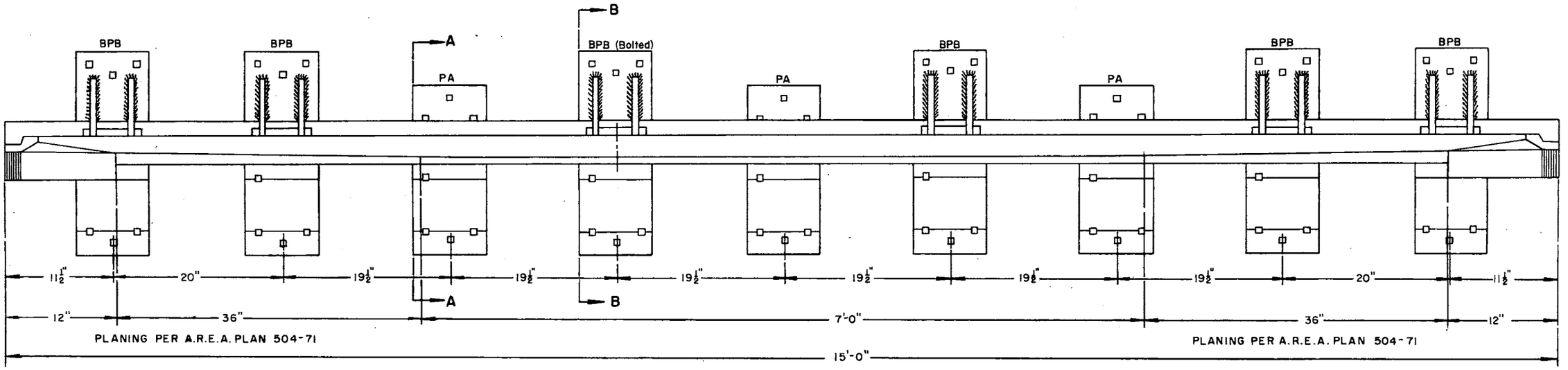
Approved

R. M. Lowenstein
Vice President, Operations

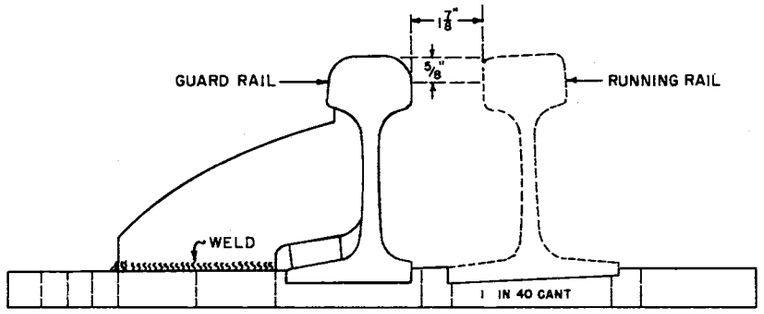
R. H. Gunderson
Asst. Vice President Engineering

Dwg. Nº C-2150.2

THIS PLAN SUPERSEDES PLAN Nº C-2150.1



BRACE PLATE B



SECTION "B-B"

TIE PLATE A

SECTION "A-A"

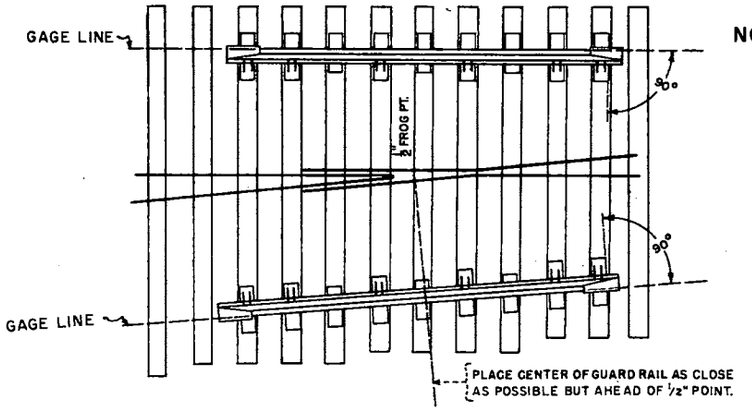


DIAGRAM SHOWING SETTING OF GUARD RAIL

NOTE:

FLANGEWAY CLEARANCE AND TIE SPACING SHALL BE AS SHOWN FOR ALL RAIL SECTIONS

H.T. BOLTS FOR BRACE PLATES TO HAVE SPECIAL HEX. NUTS (PART NO. 29 UTA 1187 MACLEAN FOGG LOCKNUT CO.)

STATE RAIL SECTION WHEN ORDERING.

BURLINGTON NORTHERN INC.
STANDARD PLAN

15 FT. RACOR EPG-2 GUARD RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1973

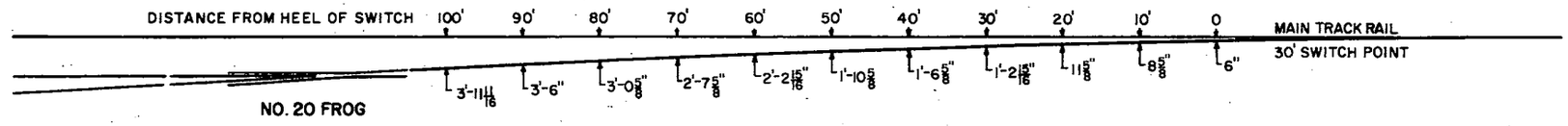
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: L. G. Thompson, Vice President Operations

Dwg. Nº C-2004.2

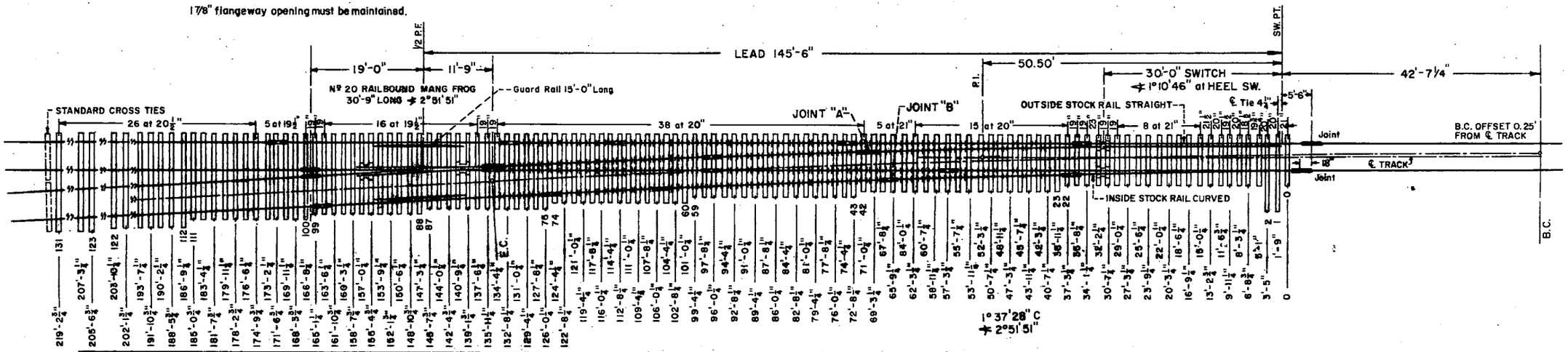
Revised 8-75, 6-81
THIS PLAN SUPERSEDES PLAN Nº C-2004.1

DIAGRAM SHOWING DISTANCES BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL



NOTE:
Place center of guard rail as close as possible but ahead of 1/2" point.

1 7/8" flangeway opening must be maintained.



BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT.BM.
1 PIECE	0	8" x 10" x 9'-0"	60
2	1 AND 2	" " 14'-0"	187
3 PIECES	8" x 10" TIMBER	TOTAL FT. BM	247

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
20 PIECES	3 TO 22 INCL.	7" x 9" x 9'-0"	945
20 "	23 " 42 "	" " 10'-0"	1050
17 "	43 " 59 "	" " 11'-0"	982
15 "	60 " 74 "	" " 12'-0"	945
13 "	75 " 87 "	" " 13'-0"	887
12 "	88 " 99 "	" " 14'-0"	882
12 "	100 " 111 "	" " 15'-0"	945
11 "	112 " 122 "	" " 16'-0"	924
9 "	123 " 131 "	" " 17'-0"	803
129 PIECES	7" x 9" SWITCH TIES	TOTAL FT. BM.	8363

APPLICATION OF GRIP RAIL ANCHORS AT TURNOUT

Location of grip rail anchors on switch ties shown -⊕- (391 Anchors) anchors also to be boxed on 200 ties ahead of switch and for 200 ties back of frog on both main track and side track. Place anchors only on ties where application can be made on both rails. (2400 anchors). Total of 2791 grip rail anchors required at each turnout.

PROPERTIES OF TURNOUT

Frog Number	20
Frog Angle	2° 51' 51"
Frog Length	30'-9"
Length of Switch	30'-0"
Heel Spread of Switch	6"
Angle at Heel of Switch	1° 10' 46"
Lead Actual	145'-6"
Degree of Curve	1° 37' 28"
Central Angle	2° 51' 51"
Straight Closure Rail	103'-9"
Curved Closure Rail	103'-10"

NOTE
Short rails to be used ahead of switch and back of frog in such manner as to effect 19 1/2 foot staggered joints as near the the turnout as possible
Turnout ties occupy 219 feet along track.
In automatic block signal territory the arrangement of long and short rails shall be such as to make joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

NOTE:
Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locotions, such as Ladder tracks, where space between tracks will not permit.

BURLINGTON NORTHERN INC
STANDARD PLAN

NO. 20 TURNOUT FOR R.E. 115 LB. RAIL USING 30FT. CURVED SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1970

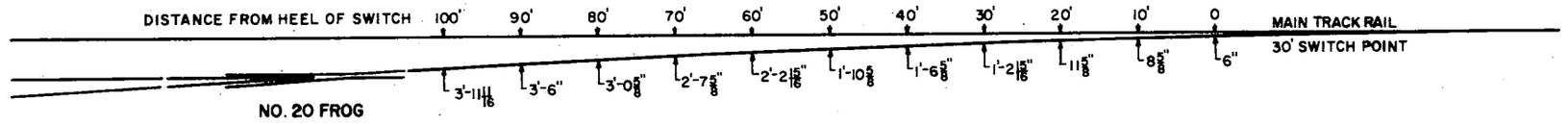
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: N. M. Lundgren, Vice President, Operations

Dwg. Nº C-2050.9

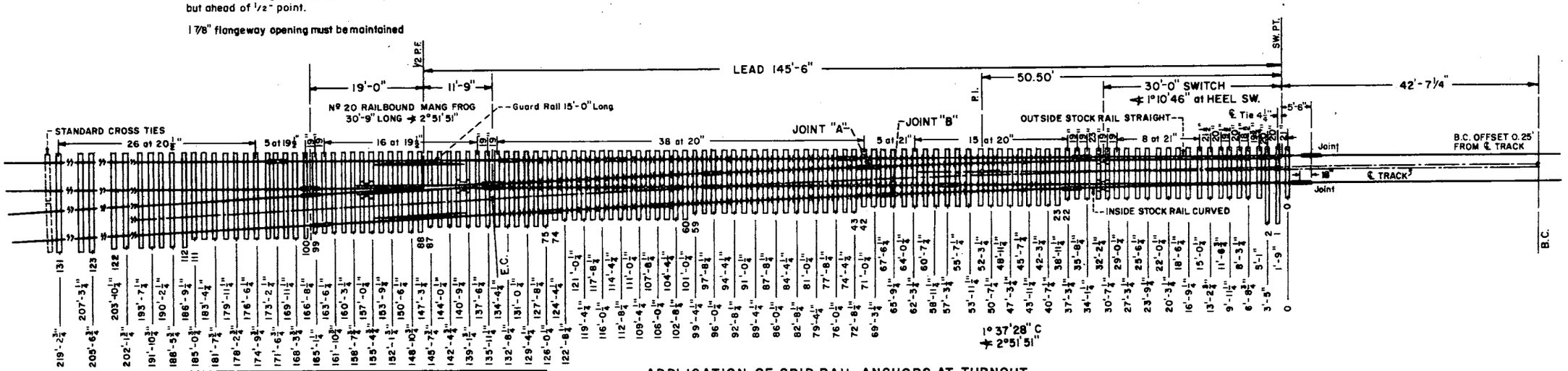
10-80, 6-81
Revised 3-71, 5-75, 2-76, 10-76, 12-76, 7-78, 4-80
THIS PLAN SUPERSEDES PLAN NO. C-2050.8

DIAGRAM SHOWING DISTANCES BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL



NOTE:
Place center of guard rail as close as possible but ahead of 1/2" point.

1 7/8" flangeway opening must be maintained



BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PIECE	0	8" x 10" x 9'-0"	60
2	1 AND 2	" " 14'-0"	187
3 PIECES	8" x 10" TIMBER	TOTAL FT. BM	247

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
20 PIECES	3 TO 22 INCL.	7" x 9" x 9'-0"	945
20 "	23 " 42 "	" " 10'-0"	1050
17 "	43 " 59 "	" " 11'-0"	982
15 "	60 " 74 "	" " 12'-0"	945
13 "	75 " 87 "	" " 13'-0"	887
12 "	88 " 99 "	" " 14'-0"	882
12 "	100 " 111 "	" " 15'-0"	945
11 "	112 " 122 "	" " 16'-0"	924
9 "	123 " 131 "	" " 17'-0"	803
129 PIECES	7" x 9" SWITCH TIES	TOTAL FT. BM.	8363

APPLICATION OF GRIP RAIL ANCHORS AT TURNOUT

Location of grip rail anchors on switch ties shown ⊕ (391 Anchors) anchors also to be boxed on 200 ties ahead of switch and for 200 ties back of frog on both main track and side track. Place anchors only on ties where application can be made on both rails. (2400 anchors). Total of 2791 grip rail anchors required at each turnout.

PROPERTIES OF TURNOUT

Frog Number	20
Frog Angle	2° 51' 51"
Frog Length	30'-9"
Length of Switch	30'-0"
Heel Spread of Switch	6"
Angle at Heel of Switch	1° 10' 46"
Lead Actual	145'-6"
Degree of Curve	1° 37' 28"
Central Angle	2° 51' 51"
Straight Closure Rail	103'-9"
Curved Closure Rail	103'-10"

NOTE
Short rails to be used ahead of switch and back of frog in such manner as to effect 19 1/2 foot staggered joints as near the the turnout as possible
Turnout ties occupy 219 feet along track.
In automatic block signal territory the arrangement of long and short rails shall be such as to make joints "A" and "B" as nearly opposite as possible but not more than 4 feet aport measured along the turnout.

NOTE:
Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BURLINGTON NORTHERN INC
STANDARD PLAN

NO. 20 TURNOUT
FOR R.E. 132LB. RAIL
USING 30FT. CURVED SWITCH

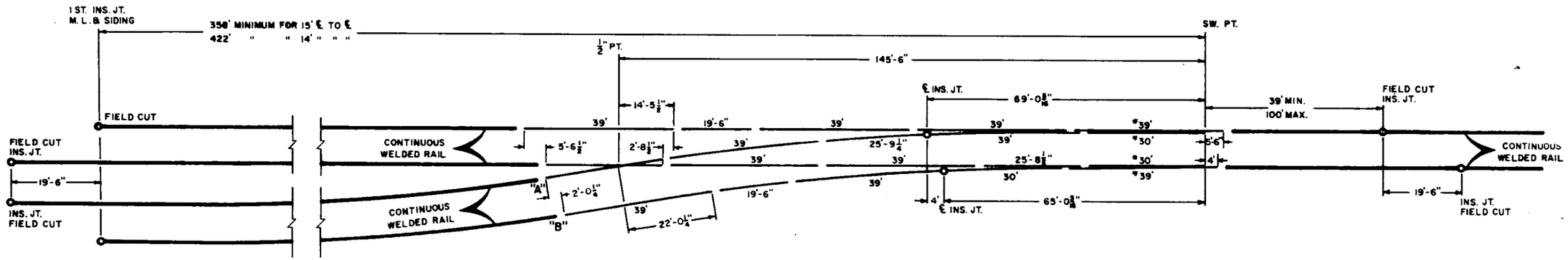
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1970

Recommended
B. H. Anderson
Asst. Vice President Engineering

Approved
N. W. Boustedt
Vice President, Operations

Dwg. Nº C-2051.9

10-80, 6-81
Revised 3-71, 5-75, 2-76, 10-76, 12-76, 7-78, 4-80
THIS PLAN SUPERSEDES PLAN NO. C-2051.8



NOTE:

IF SIDING IS BOLTED RAIL ADD ONE 19'-6" & TWO 39' RAILS TO HEEL OF FROG AT POINT "A" AND TWO 39' RAILS AT POINT "B".

LEGEND

— — STANDARD RAIL JOINT ADD 1/8"

—o— INSULATED " " " 3/16"

CLOSURE RAIL LENGTH

	CURVED	STRAIGHT
	2 - 39'	2 - 39'
	1 - 25'-9¼"	1 - 25'-8½"
1 Insulated Jt. -	3/16"	
3 Standard Jt. -	3/8"	4 Jt. - 1/2"
TOTAL	103'-10"	103'-9"

TURNOUT RAIL LENGTHS

9 - 39'
1 - 30'
1 - 25'-9¼"
1 - 25'-8½"
2 - 19'-6"
TOTAL ▲14 RAILS (SEE NOTE)

▲IF FIELD CUT (FROM 39' RAILS) 13 RAILS SHALL BE FURNISHED 18 IF SIDING IS BOLTED RAIL.

* 30 FT. CURVED SWITCH (INCLUDES) 2 - 39' UNDERCUT STOCK RAILS & 2 - 30' SWITCH POINTS.

BURLINGTON NORTHERN INC.

STANDARD PLAN

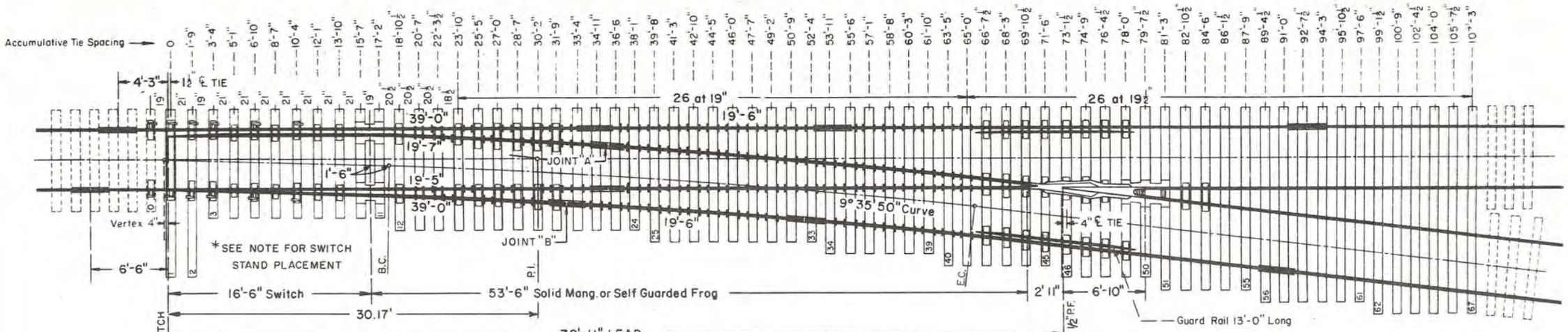
TYPICAL LAYOUT Nº 20 TURNOUT
FOR USE IN
115-132 LB. C.T.C. CONTINUOUS WELDED RAIL TERRITORY

ENGINEERING DIVISION, ST PAUL, MINN. OCT. 1975

Recommended: B. H. Anderson — Asst. Vice President Engineering

Approved: J. H. Welty — Vice President, Operations

Dwg. C-2051.0 Sh. 2



SOLID MANGANESE OR SELF GUARDED FROG
(SOLID MANGANESE SHOWN)

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point. 1 7/8" flangeway opening must be maintained. Guard rails are not required on self guarded frogs.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown ⊕ (175 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.
In signal territory the arrangment of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE:
For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. BM. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Lengths	
Solid or Self Guarded Mang. Frog	9'-9"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9° 35' 50"
Central Angle of Curve	4° 35' 13"
Straight Closure	
Solid or Self Guarded Mang. Frog	53'-6"
Curved Closure	
Solid or Self Guarded Mang. Frog	53'-8"

BURLINGTON NORTHERN INC.
STANDARD PLAN

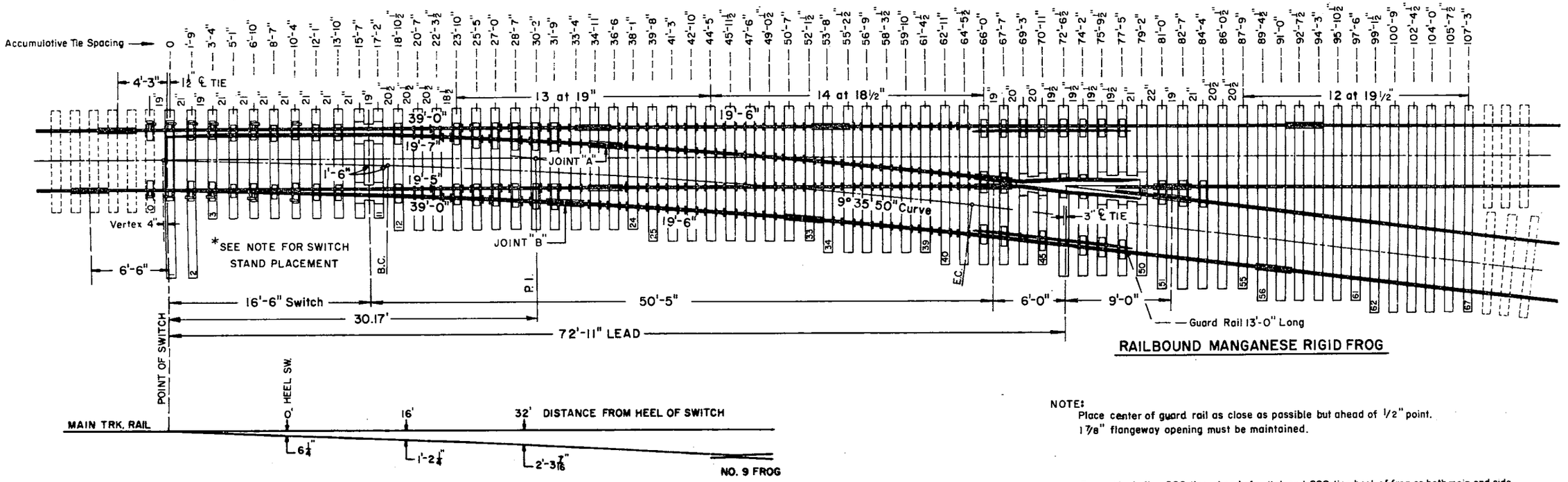
NO. 9 TURNOUT
115 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1970

Recommended: B. H. Anderson, Asst. Vice President Engineering
Approved: N. M. Lomenzani, Vice President, Operations

Revised 3-71, 8-71, 5-75, 2-76, 7-78, 6-81
THIS PLAN SUPERSEDES PLAN NO. C-2052.5

Dwg. Nº C-2052.6



RAILBOUND MANGANESE RIGID FROG

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1 7/8" flangeway opening must be maintained.

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown ⊕ (175 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.
In signal territory the arrangement of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE: For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT.BM.
1 PC	NO.'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. BM. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Length	15-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9° 35' 50"
Central Angle of Curve	4° 35' 13"
Straight Closure	50'-5"
Curved Closure	50'-7"

BURLINGTON NORTHERN INC.
STANDARD PLAN

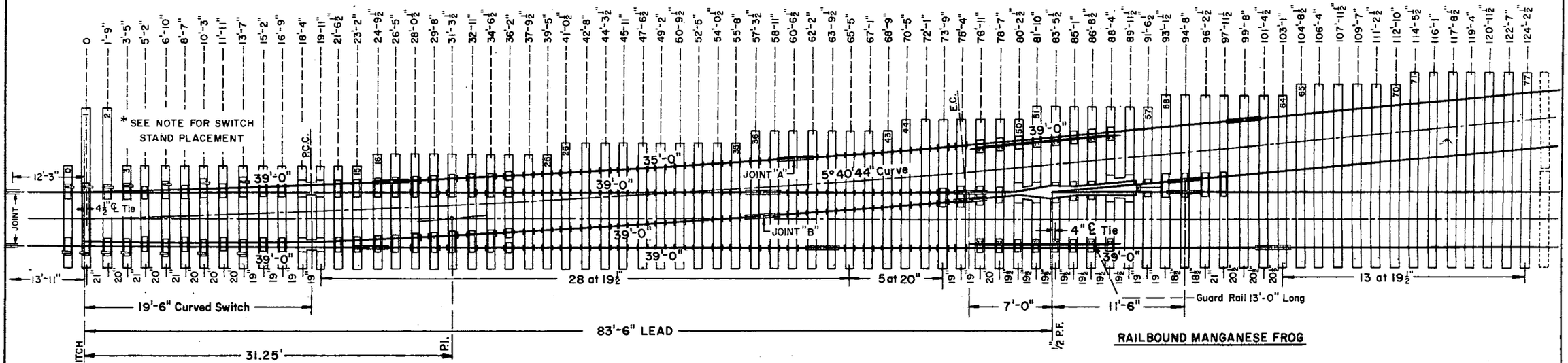
NO. 9 TURNOUT
115 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering
Approved: W. M. Lowenstein, Vice President, Operations

Dwg. Nº C-2053.6

Revised 3-71, 8-71, 5-75, 2-76, 7-78, 7-81
THIS PLAN SUPERSEDES PLAN NO. C-2053.5



RAILBOUND MANGANESE FROG

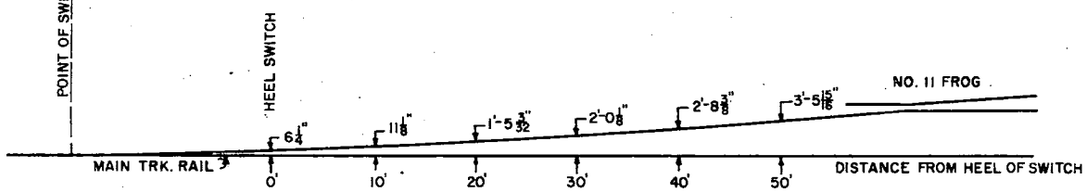


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1⅞" flangeway opening must be maintained.

NOTE:
Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track, to be securely anchored against movement in either direction.

Location of rail anchors on turnout shown -⊕-(200 anchors). Rail anchors to be boxed on the 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2600 rail anchors required on each turnout.

In signal territory the arrangement of long and short rails shall be such as to make Joint "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

PROPERTIES OF TURNOUT

Frog No.	11
Frog Angle	5° 12' 18"
Frog Length	18'-6"
Throw of Switch at Head Rod	5"
Length of Switch Points	19'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 59' 15"
Lead	83'-6"
Radius	1009.34'
Degree of Curve	5°40'44"
Central Angle of Curve	3° 13' 03"
Straight Closure	57'-0½"
Curved Closure	57'-1⅞"

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
14 PCS.	0, 3 To 15 INCL.	7" x 9" x 9'-0"	662
10 PCS.	16 To 25 INCL.	7" x 9" x 10'-0"	525
10 PCS.	26 To 35 INCL.	7" x 9" x 11'-0"	578
8 PCS.	36 To 43 INCL.	7" x 9" x 12'-0"	504
7 PCS.	44 To 50 INCL.	7" x 9" x 13'-0"	478
7 PCS.	51 To 57 INCL	7" x 9" x 14'-0"	515
7 PCS.	58 To 64 INCL.	7" x 9" x 15'-0"	551
6 PCS.	65 To 70 INCL.	7" x 9" x 16'-0"	504
7 PCS.	71 To 77 INCL.	7" x 9" x 17'-0"	625
78 PIECES		TOTAL FT. B.M.	5100

NOTE:
For Electric Switch layout replace ties 0, 1 and 2 as shown above with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. B.M. FOR ELECTRIC SW. LAYOUT			5142

NOTE
For Machine Operated Spring Switch layout replace ties 0, 1, 2, 5 & 6 as shown above with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
4 PCS.	" 1, 2, 5 & 6	8" x 10" x 14'-0"	373
TOTAL FT. B.M FOR MACH. OPERATED SPRING SW. LAYOUT			5234

Revised 3-71, 5-71, 4-74, 2-76, 7-78, 10-80, 7-81
THIS PLAN SUPERSEDES PLAN NO. C-2054.6

BURLINGTON NORTHERN INC.
STANDARD PLAN

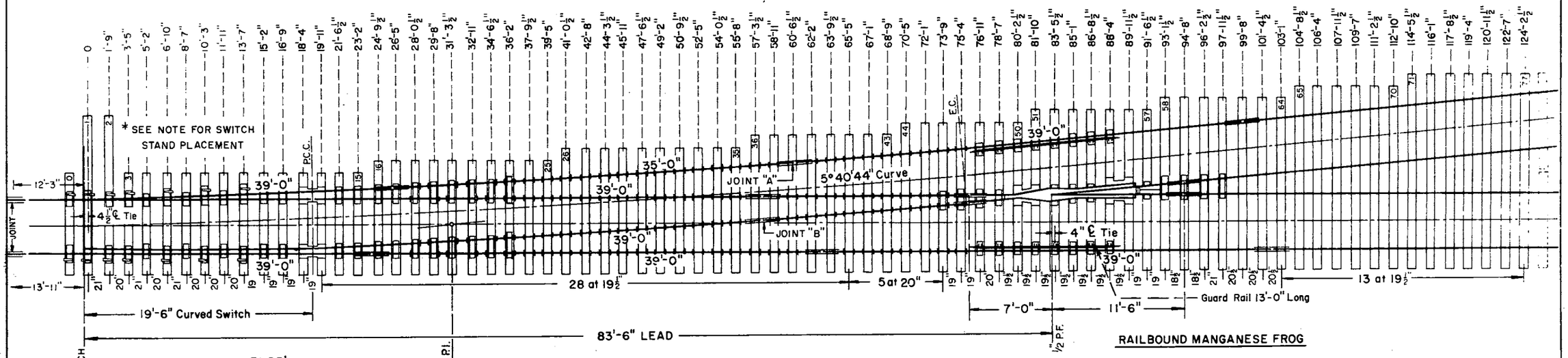
NO. 11 TURNOUT
115 LB. R.E. RAIL
19 FT. 6 IN. CURVED SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1970

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: W. M. Parentyeau, Vice President, Operations

Dwg. № C-2054.7



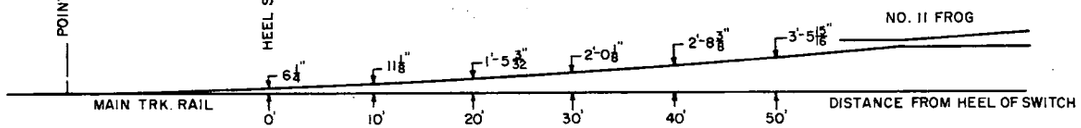


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1⅞" flangeway opening must be maintained.

NOTE:
Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track to be securely anchored against movement in either direction.

Location of rail anchors on turnout shown -⊕- (200 anchors). Rail anchors to be boxed on the 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2600 rail anchors required on each turnout.

In signal territory the arrangement of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
14 PCS.	0, 3 To 15 INCL.	7" x 9" x 9'-0"	662
10 PCS.	16 To 25 INCL.	7" x 9" x 10'-0"	525
10 PCS.	26 To 35 INCL.	7" x 9" x 11'-0"	578
8 PCS.	36 To 43 INCL.	7" x 9" x 12'-0"	504
7 PCS.	44 To 50 INCL.	7" x 9" x 13'-0"	478
7 PCS.	51 To 57 INCL	7" x 9" x 14'-0"	515
7 PCS.	58 To 64 INCL.	7" x 9" x 15'-0"	551
6 PCS.	65 To 70 INCL.	7" x 9" x 16'-0"	504
7 PCS.	71 To 77 INCL.	7" x 9" x 17'-0"	625
78 PIECES		TOTAL FT. B.M.	5100

NOTE:
For Electric Switch layout replace ties 0, 1 and 2 as shown above with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. B.M. FOR ELECTRIC SW. LAYOUT			5142

Revised 3-71, 7-71, 5-75, 2-76, 7-78, 10-80, 7-81
THIS PLAN SUPERSEDES PLAN NO. C-2055.6

PROPERTIES OF TURNOUT

Frog No.	11
Frog Angle	5° 12' 18"
Frog Length	18'-6"
Throw of Switch at Head Rod	5"
Length of Switch Points	19'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 59' 15"
Lead	83'-6"
Radius	1009.34'
Degree of Curve	5°40'44"
Central Angle of Curve	3° 13' 03"
Straight Closure	57'-0½"
Curved Closure	57'-1⅞"

NOTE:
For Machine Operated Spring Switch layout replace ties 0, 1, 2, 5 & 6 as shown above with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
4 PCS.	1, 2, 5 & 6	8" x 10" x 14'-0"	373
TOTAL FT. BM. FOR MACH. OPERATED SPRING SW. LAYOUT			5234

BURLINGTON NORTHERN INC.
STANDARD PLAN

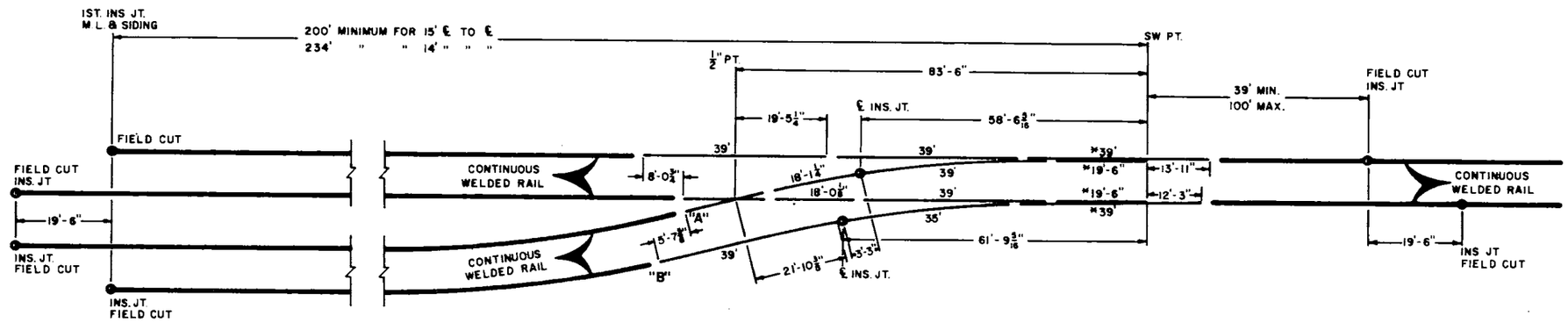
NO. 11 TURNOUT
132 LB. R.E. RAIL
19 FT. 6 IN. CURVED SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. M. Bomhoff, Vice President, Operations

Dwg. Nº C-2055.7



NOTE:

IF SIDING IS BOLTED RAIL ADD ONE 39' RAIL TO HEEL OF FROG AT POINT "A" AND ONE 39' RAIL AT POINT "B".

LEGEND

STANDARD RAIL JOINT ADD 1/8"

INSULATED " " " 3/8"

CLOSURE RAIL LENGTH

	CURVED	STRAIGHT
	1 - 39'	1 - 39'
	1 - 18'-1 1/4"	1 - 18'-0 1/8"
1 Insulated Jt. -	3/8"	
2 Standard Jt. -	1/4"	3 Jt. - 3/8"
TOTAL	57'-1 7/8"	57'-0 1/2"

TURNOUT RAIL LENGTHS

5 - 39'
1 - 35'
1 - 18'-1 1/4"
1 - 18'-0 1/8"
TOTAL ▲8 RAILS (SEE NOTE)

▲IF FIELD CUT (FROM 39' RAILS) 7 RAILS SHALL BE FURNISHED 9 IF SIDING IS BOLTED RAIL.

* 19'-6" CURVED SWITCH (INCLUDES) 2 - 39' UNDERCUT STOCK RAILS & 2 - 19'-6" SWITCH POINTS.

BURLINGTON NORTHERN INC.

STANDARD PLAN

TYPICAL LAYOUT Nº 11 TURNOUT FOR USE IN

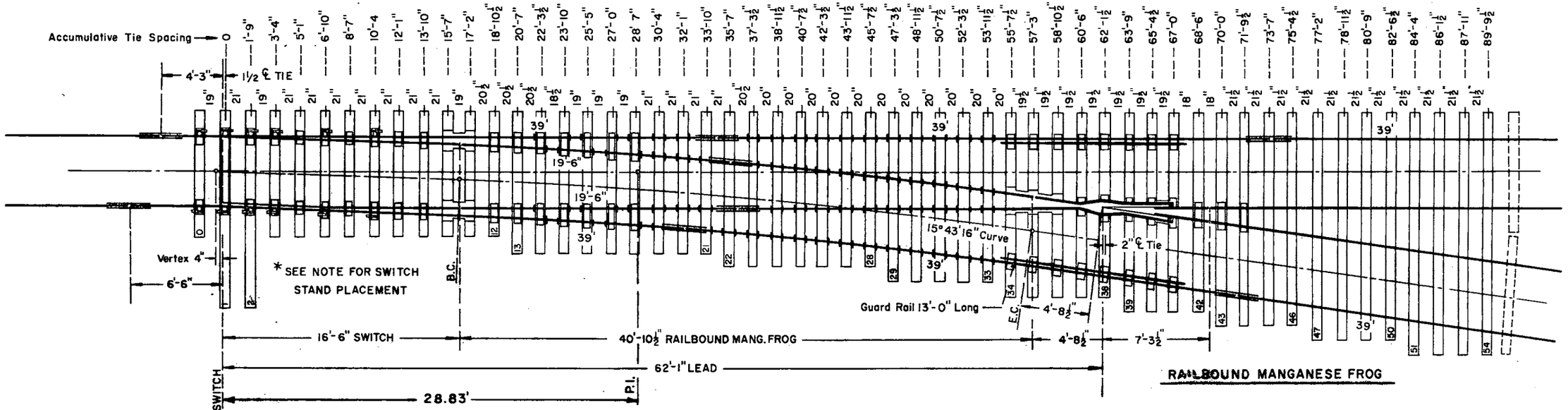
115-132 LB C.T.C. CONTINUOUS WELDED RAIL TERRITORY

ENGINEERING DIVISION, ST PAUL, MINN. NOV 1975

Recommended: B H Anderson, Asst Vice President Engineering

Approved: J W Hartog, Vice President, Operations

Dwg. C-2055.0 Sh. 2



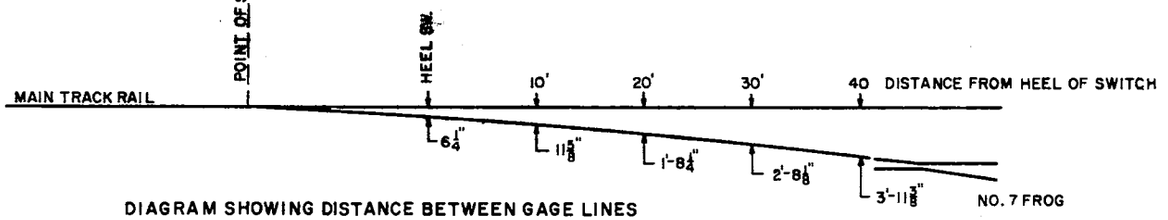


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1 7/8" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown (124 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2524 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS.	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS.	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	12'-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	62'-1"
Radius	365.49"
Degree of Curve T.O.	15° 43' 16"
Central Angle of Curve	6° 23' 54"
Straight Closure	40'-10½"
Curved Closure	41'-1¼"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
115 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

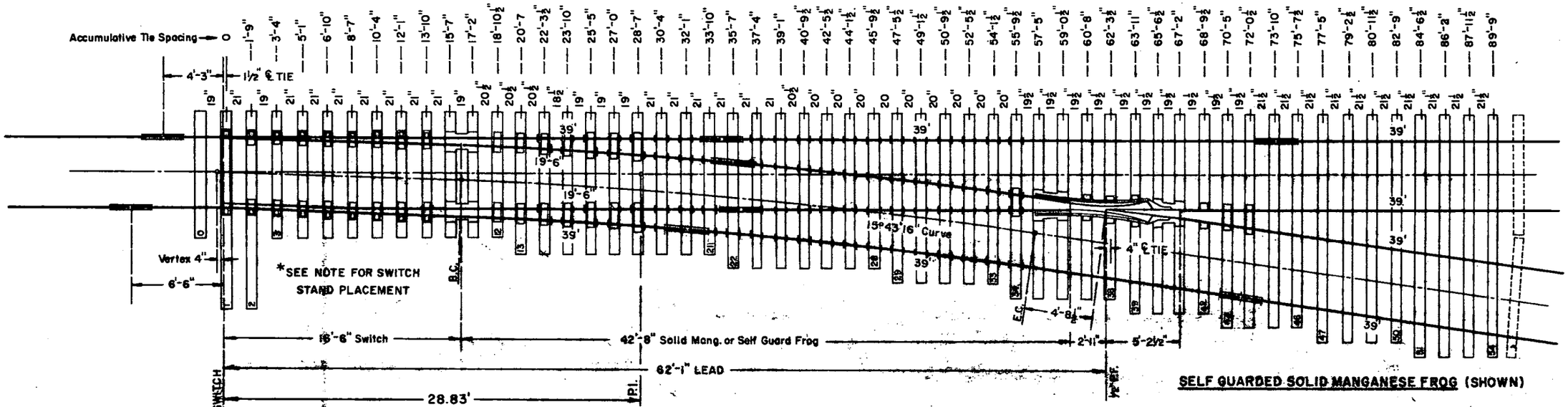
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

Recommended: B. H. Anderson — Asst. Vice President Engineering

Approved: R. M. Lowenthal — Vice President, Operations

Revised 3-71, 5-75, 2-76, 10-80, 7-81
THIS PLAN SUPERSEDES PLAN NO. C-2056.4

Dwg. № C-2056.5



SELF GUARDED SOLID MANGANESE FROG (SHOWN)

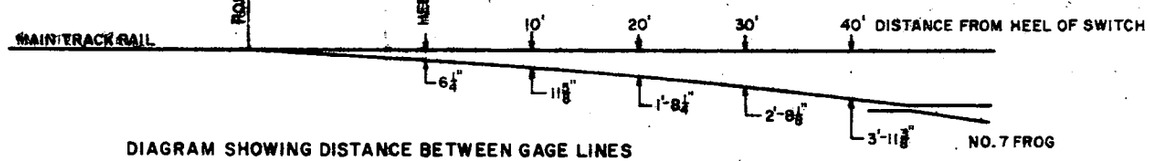


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction

Location of rail anchors on turnout shown -O- (132 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2532 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	8'-1½"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'- 6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	62'- 1"
Radius	365.49'
Degree of Curve T.O.	15° 43' 16"
Central Angle of Curve	6°23' 54"
Straight Closure	42'- 7¾"
Curved Closure	42'-10 ½"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
115 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

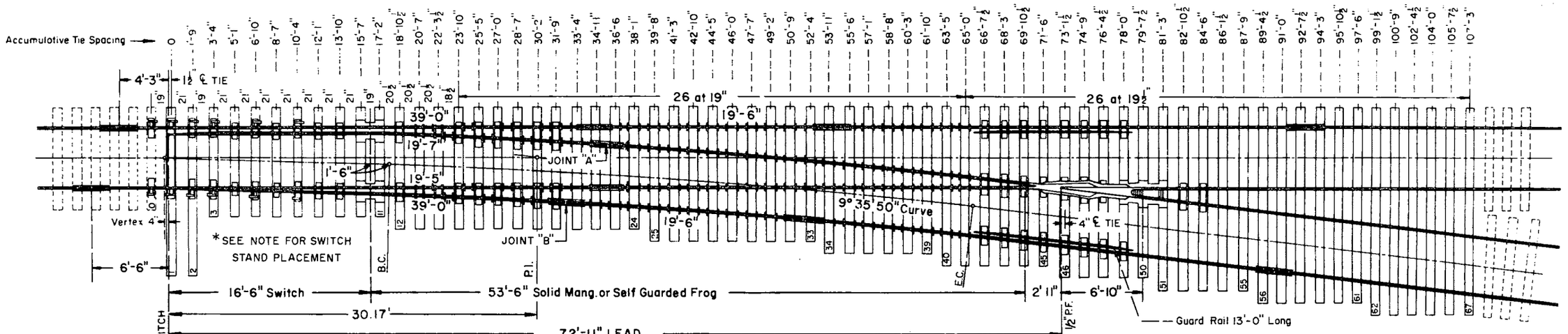
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1976

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. M. Bonnstetter, Vice President, Operations

Dwg. № C-2057.3

THIS PLAN SUPERSEDES PLAN NO. C-2057.2



SOLID MANGANESE OR SELF GUARDED FROG
(SOLID MANGANESE SHOWN)

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point. Guard rails are not required on self guarded frogs.
1⅞" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown ⊕ (175 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.
In signal territory the arrangement of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE
For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. BM. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Lengths	
Solid or Self Guarded Mang. Frog	9'-9"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1°46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9°35'50"
Central Angle of Curve	4°35' 13"
Straight Closure	
Solid or Self Guarded Mang. Frog	53'-6"
Curved Closure	
Solid or Self Guarded Mang. Frog	53'-8"

BURLINGTON NORTHERN INC.
STANDARD PLAN

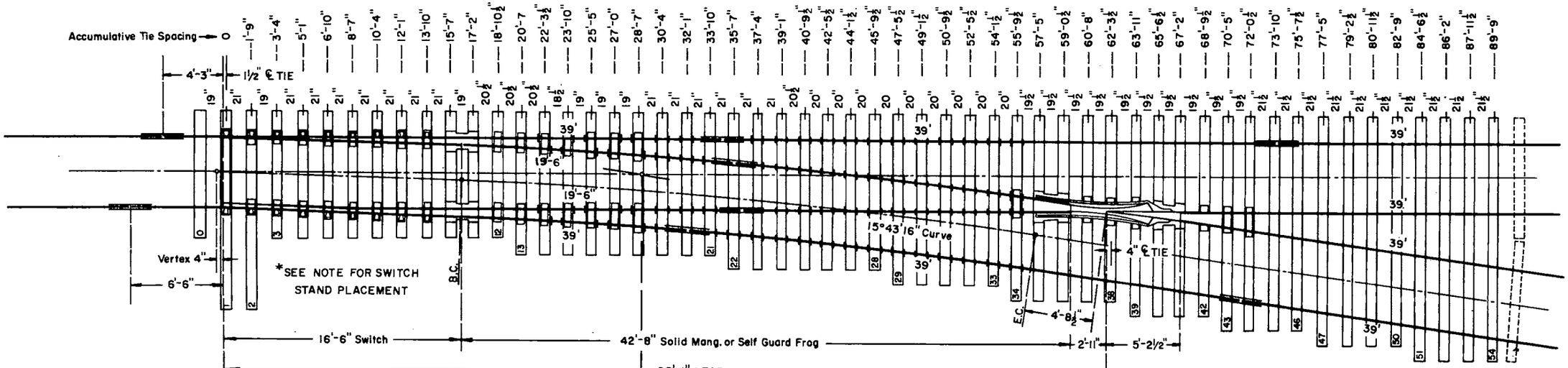
NO. 9 TURNOUT
132 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

Recommended: B. H. Anderson, Asst Vice President Engineering
Approved: N. M. Rosenberger, Vice President, Operations

Dwg. № C-2058.5

Revised 8-71, 5-75, 2-76, 7-78, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2058.4



SELF GUARDED SOLID MANGANESE FROG (SHOWN)

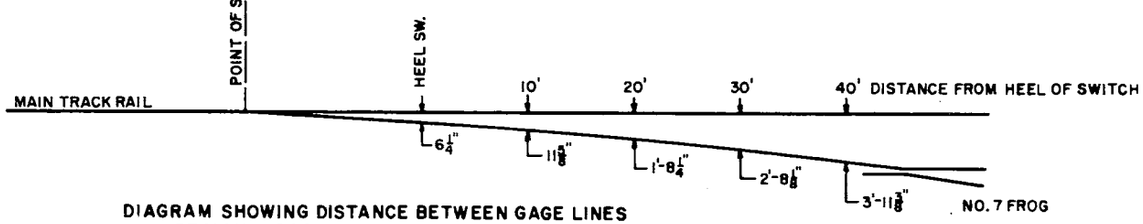


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction

Location of rail anchors on turnout shown -O- (132 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2532 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	8'-1½"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'- 6"
Heel Spread of Switch	6 ¼"
Switch Angle	1° 46' 22"
Lead	62'- 1"
Radius	365.49'
Degree of Curve T.O.	15° 43' 16"
Central Angle of Curve	6° 23' 54"
Straight Closure	42'- 7¾"
Curved Closure	42'- 10 ½"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
132 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

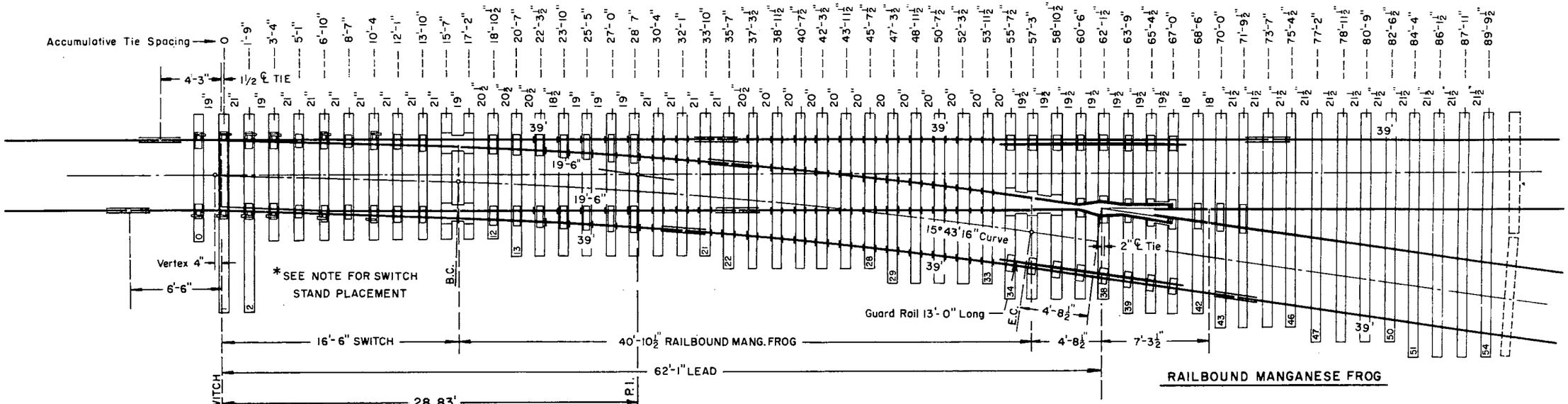
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1976

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-2059.1

Dwg. Nº C-2059.2



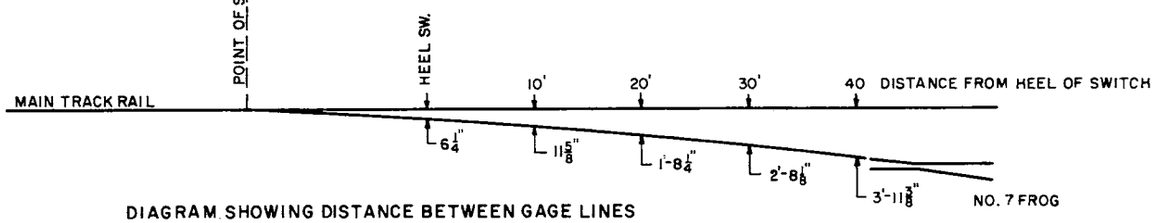


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1⅞" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown (124 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2524 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS.	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS.	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	12'-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	62'-1"
Radius	365.49"
Degree of Curve T.O.	15° 43'16"
Central Angle of Curve	6°23'54"
Straight Closure	40'-10½"
Curved Closure	41'-1¼"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
132 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

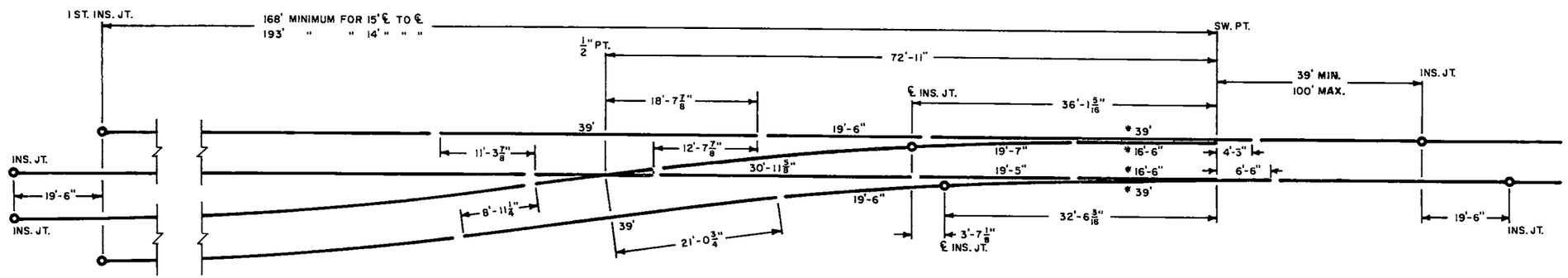
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Revised 5-75, 2-76, 10-80, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2060.3

Dwg. № C-2060.4



LEGEND

STANDARD RAIL JOINT ADD 1/8"
INSULATED " " " 3/8"

CLOSURE RAIL LENGTH

	CURVED	STRAIGHT
	1 - 30'-11 5/8"	1 - 30'-11 5/8"
	1 - 19'-7"	1 - 19'-5"
1 Insulated Jt. -	3/8"	
2 Standard Jt. -	1/4"	3 Jt. - 3/8"
TOTAL	50'-7 1/4"	50'-5"

* 16'-6" STRAIGHT SWITCH (INCLUDES)
2 - 39' UNDERCUT STOCK RAILS &
2 - 16'-6" SWITCH POINTS.

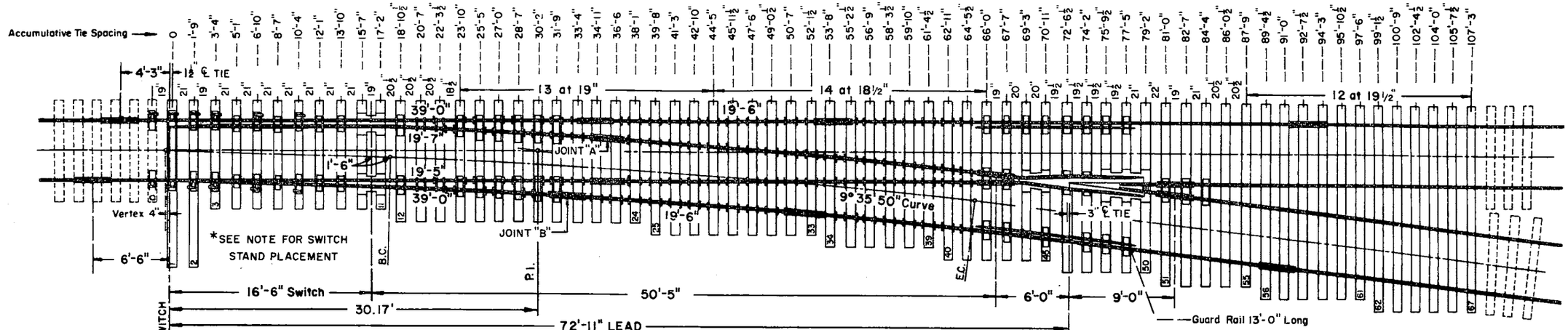
BURLINGTON NORTHERN INC.
STANDARD PLAN

TYPICAL LAYOUT Nº 9 TURNOUT
FOR USE IN
115-132LB
BOLTED RAIL TERRITORY

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1980

Recommended: R. L. Anderson, Asst. Vice President Engineering
Approved: J. H. Hallong, Sr. Vice President, Operations

Dwg. Nº C-2061.0 Sh. 2



RAILBOUND MANGANESE RIGID FROG

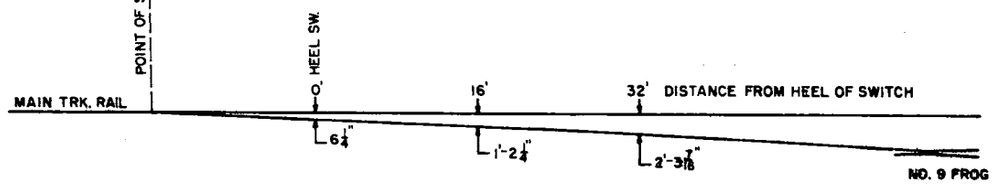


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1⅞" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown (175 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 800 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.
In signal territory the arrangement of long and short rails shall be such as to make Joint "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

*Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE
For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. B.M. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Length	15-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9° 35' 50"
Central Angle of Curve	4° 35' 13"
Straight Closure	50'-5"
Curved Closure	50'-7"

BURLINGTON NORTHERN INC.
STANDARD PLAN

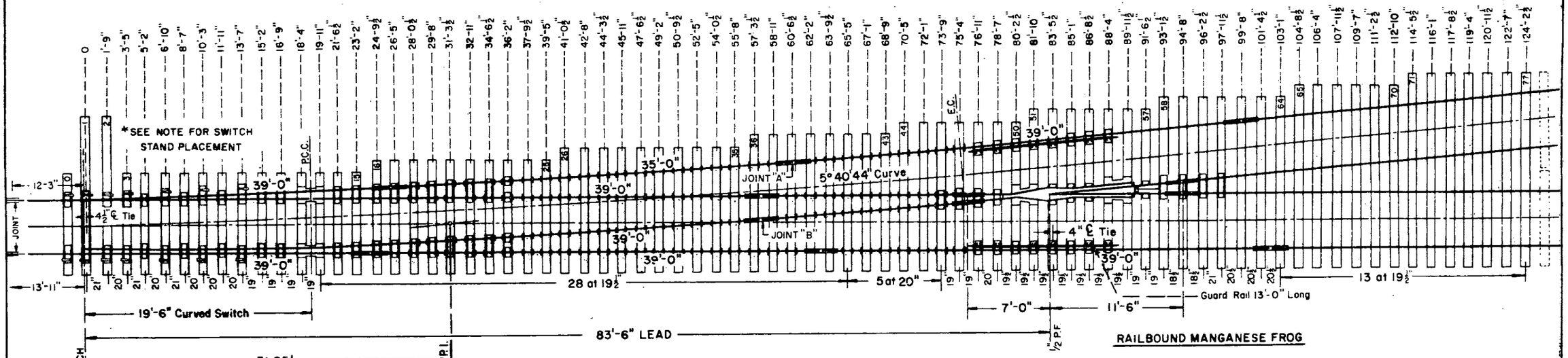
NO. 9 TURNOUT
132 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

ENGINEERING DIVISION, ST PAUL, MINN. FEB. 1971

Recommended: R. H. Anderson, Asst. Vice President Engineering
Approved: M. M. Rosenthal, Vice President, Operations

Revised 8-71, 5-75, 2-76, 7-78, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2061.4

Dwg. Nº C-2061.5



RAILBOUND MANGANESE FROG

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1⅞" flangeway opening must be maintained.

NOTE:
Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track, to be securely anchored against movement in either direction.

Location of rail anchors on turnout shown -⊕- (200 anchors). Rail anchors to be boxed on the 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2600 rail anchors required on each turnout.

In signal territory the arrangement of long and short rails shall be such as to make Joint "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
14 PCS.	0, 3 To 15 INCL.	7" x 9" x 9'-0"	662
10 PCS.	16 To 25 INCL.	7" x 9" x 10'-0"	525
10 PCS.	26 To 35 INCL.	7" x 9" x 11'-0"	578
8 PCS.	36 To 43 INCL.	7" x 9" x 12'-0"	504
7 PCS.	44 To 50 INCL.	7" x 9" x 13'-0"	478
7 PCS.	51 To 57 INCL.	7" x 9" x 14'-0"	515
7 PCS.	58 To 64 INCL.	7" x 9" x 15'-0"	551
6 PCS.	65 To 70 INCL.	7" x 9" x 16'-0"	504
7 PCS.	71 To 77 INCL.	7" x 9" x 17'-0"	625
78 PIECES		TOTAL FT. B.M.	5100

NOTE:
For Electric Switch layout replace ties 0, 1 and 2 as shown above with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC.	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. B.M. FOR ELECTRIC SW. LAYOUT			5142

Revised 5-75, 2-76, 7-78, 10-80, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2062.4

PROPERTIES OF TURNOUT

Frog No.	11
Frog Angle	5° 12' 18"
Frog Length	18'-6"
Throw of Switch at Head Rod	5"
Length of Switch Points	19'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 59' 15"
Lead	83'-6"
Radius	1009.34'
Degree of Curve	5° 40' 44"
Central Angle of Curve	3° 13' 03"
Straight Closure	57'-0½"
Curved Closure	57'-1⅞"

BURLINGTON NORTHERN INC.
STANDARD PLAN

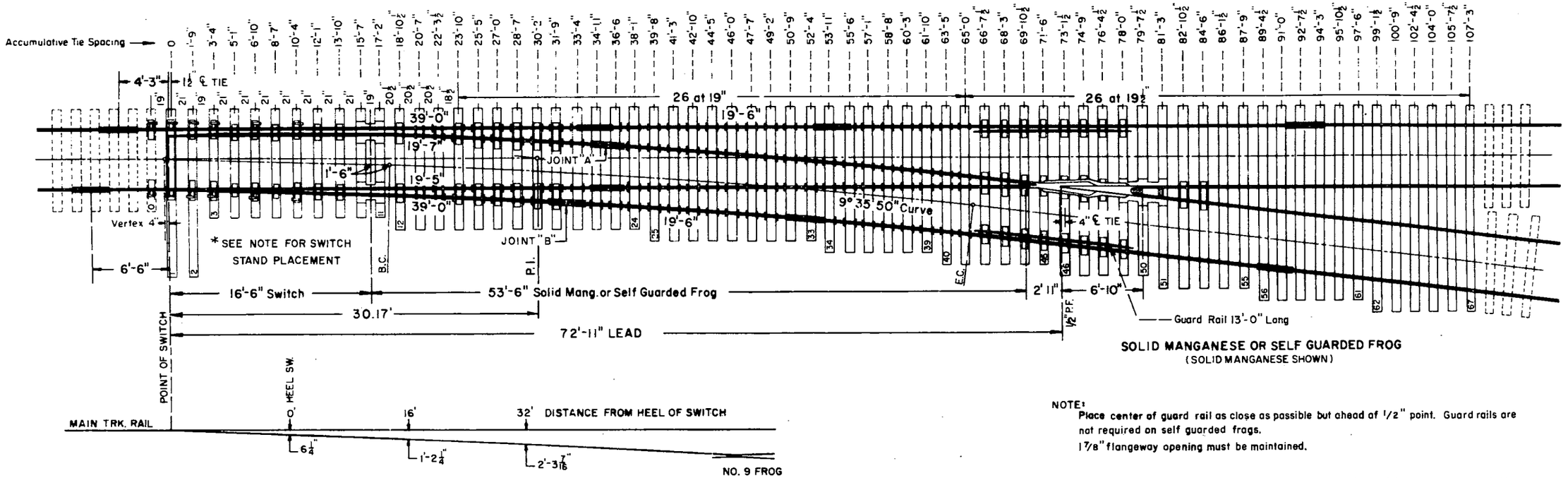
NO. 11 TURNOUT
112 LB. R.E. RAIL
19 FT. 6 IN. CURVED SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971

Recommended: B. G. Anderson — Asst. Vice President Engineering

Approved: [illegible] — Vice President, Operations

Dwg. Nº C-2062.5



SOLID MANGANESE OR SELF GUARDED FROG
(SOLID MANGANESE SHOWN)

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point. Guard rails are not required on self guarded frogs.
1⅞" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown ⊕ (175 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.
In signal territory the arrangment of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE:
For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. BM. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Lengths	
Solid or Self Guarded Mang. Frog	9'-9"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9° 35' 50"
Central Angle of Curve	4° 35' 13"
Straight Closure	
Solid or Self Guarded Mang. Frog	53'-6"
Curved Closure	
Solid or Self Guarded Mang. Frog	53'-8"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 TURNOUT
112 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

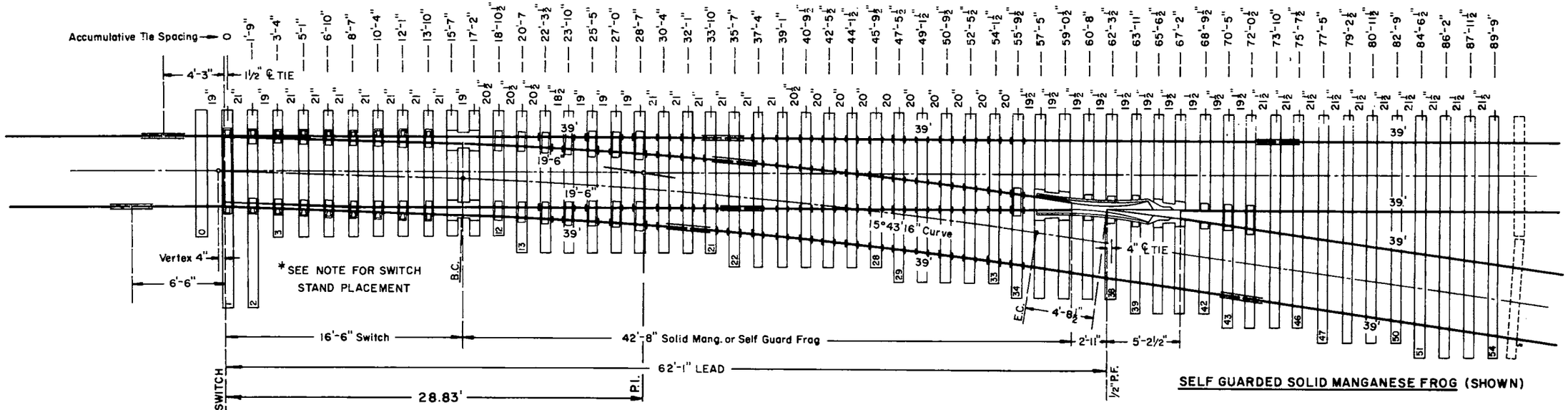
ENGINEERING DIVISION, ST PAUL, MINN. NOV. 1971

Recommended: Asst Vice President Engineering

Approved: Vice President, Operations

Revised 5-75, 2-76, 7-78, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2063.3

Dwg Nº C-2063.4



SELF GUARDED SOLID MANGANESE FROG (SHOWN)

DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction

Location of rail anchors on turnout shown -O- (132 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2532 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	8'-1½"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'- 6"
Heel Spread of Switch	6 ¼"
Switch Angle	1° 46' 22"
Lead	62'- 1"
Radius	365.49'
Degree of Curve T.O.	15° 43' 16"
Central Angle of Curve	6°23' 54"
Straight Closure	42'- 7 ¾"
Curved Closure	42'-10 ½"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
112 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

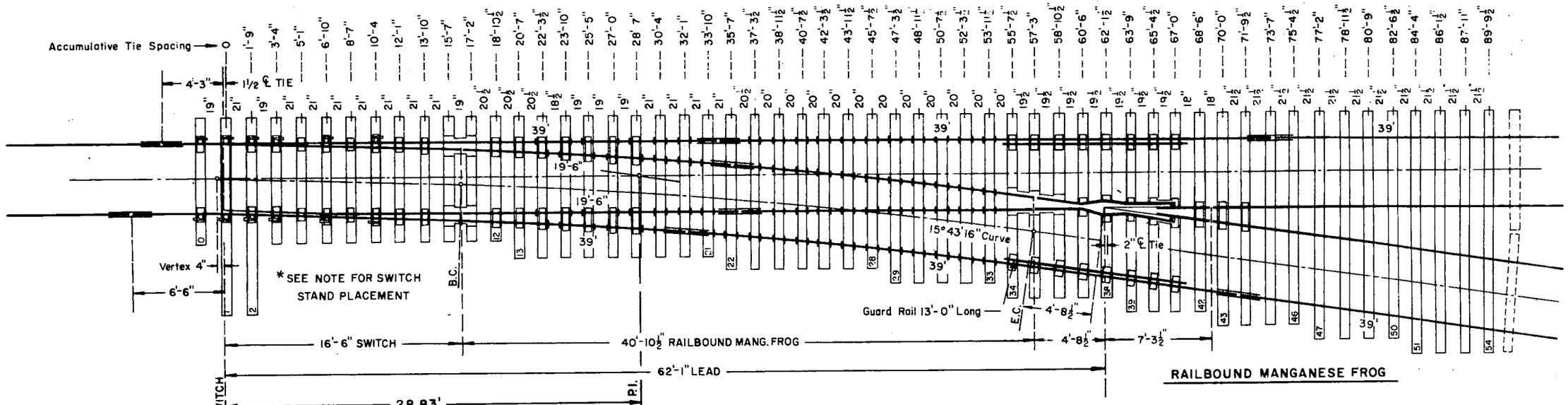
ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1976

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-2064.1

Dwg. Nº C-2064.2



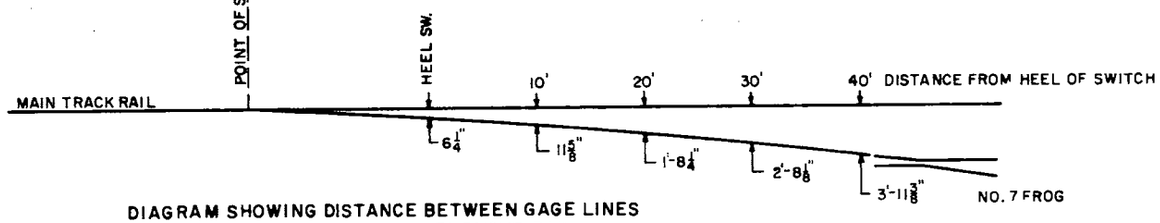


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" paint.
1⅞" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.
Location of rail anchors on turnout shown (124 anchors). Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2524 rail anchors required at each turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM
2 PCS.	NO'S 1 & 2	7" x 9" x 15'-0"	158
11 PCS.	0, 3 To 12 INCL.	7" x 9" x 9'-0"	520
9 PCS.	13 To 21 INCL.	7" x 9" x 10'-0"	473
7 PCS.	22 To 28 INCL.	7" x 9" x 11'-0"	404
5 PCS.	29 To 33 INCL.	7" x 9" x 12'-0"	315
5 PCS.	34 To 38 INCL.	7" x 9" x 13'-0"	342
4 PCS.	39 To 42 INCL.	7" x 9" x 14'-0"	294
4 PCS.	43 To 46 INCL.	7" x 9" x 15'-0"	315
4 PCS.	47 To 50 INCL.	7" x 9" x 16'-0"	336
4 PCS.	51 To 54 INCL.	7" x 9" x 17'-0"	357
55 PIECES		TOTAL FT. B.M.	3514

PROPERTIES OF TURNOUT

Frog No.	7
Frog Angle	8° 10' 16"
Frog Length	12'-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	62'-1"
Radius	365.49"
Degree of Curve T.O.	15° 43'16"
Central Angle of Curve	6°23'54"
Straight Closure	40'-10½"
Curved Closure	41'-1¼"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 7 TURNOUT
112 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

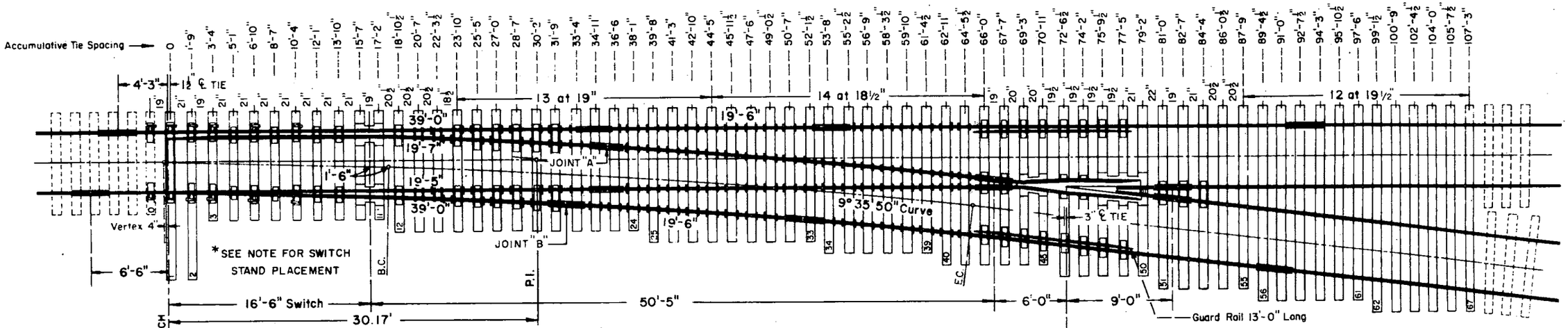
ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: [illegible], Vice President, Operations

Revised 5-75, 2-76, 10-80, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2065.3

Dwg. № C-2065.4



RAILBOUND MANGANESE RIGID FROG

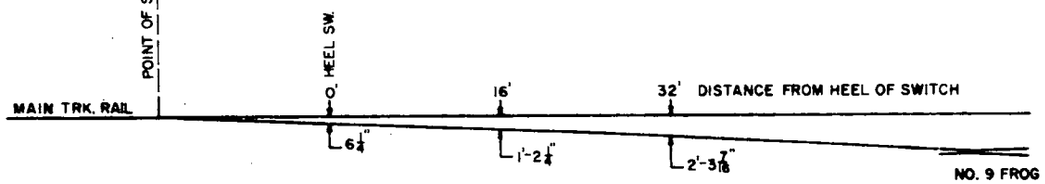


DIAGRAM SHOWING DISTANCE BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL

NOTE:
Place center of guard rail as close as possible but ahead of ½" point.
1 7/8" flangeway opening must be maintained.

Turnout including 200 ties ahead of switch and 200 ties back of frog on both main and side track securely anchored against movement in either direction.

Location of rail anchors on turnout shown ⊕ (175 anchors) Rail anchors to be boxed on 200 ties ahead of switch and 200 ties back of frog on both main and side track. Place anchors only where application can be made on both rails (2400 anchors). Total of 2575 rail anchors required at each turnout.

In signal territory the arrangement of long and short rails shall be such as to make Joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

* Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
2 PCS	NO'S 1 & 2	7" x 9" x 15'-0"	158
9 PCS.	3 To 11 INCL.	7" x 9" x 9'-0"	425
13 PCS.	12 To 24 INCL.	7" x 9" x 10'-0"	683
9 PCS.	25 To 33 INCL.	7" x 9" x 11'-0"	520
6 PCS.	34 To 39 INCL.	7" x 9" x 12'-0"	378
6 PCS.	40 To 45 INCL.	7" x 9" x 13'-0"	410
5 PCS	46 To 50 INCL.	7" x 9" x 14'-0"	368
5 PCS.	51 To 55 INCL.	7" x 9" x 15'-0"	394
6 PCS.	56 To 61 INCL.	7" x 9" x 16'-0"	504
6 PCS.	62 To 67 INCL.	7" x 9" x 17'-0"	536
67 PIECES		TOTAL FT. B.M.	4376

NOTE: For Electric Switch layout replace ties 0, 1 and 2 with the following ties.

NUMBER	DESCRIPTION	SIZE	FT. BM.
1 PC	NO'S 0	8" x 10" x 9'-0"	60
2 PCS.	" 1 and 2	8" x 10" x 14'-0"	187
TOTAL FT. BM. FOR ELECTRIC SWITCH LAYOUT			4465

PROPERTIES OF TURNOUT

Frog No.	9
Frog Angle	6° 21' 35"
Frog Length	15'-0"
Throw of Switch at Head Rod	5"
Length of Switch Points	16'-6"
Heel Spread of Switch	6¼"
Switch Angle	1° 46' 22"
Lead	72'-11"
Radius	597.71'
Degree of Curve	9° 35' 50"
Central Angle of Curve	4° 35' 13"
Straight Closure	50'-5"
Curved Closure	50'-7"

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 TURNOUT
112 LB. R.E. RAIL
16 FT. 6 IN. STRAIGHT SWITCH

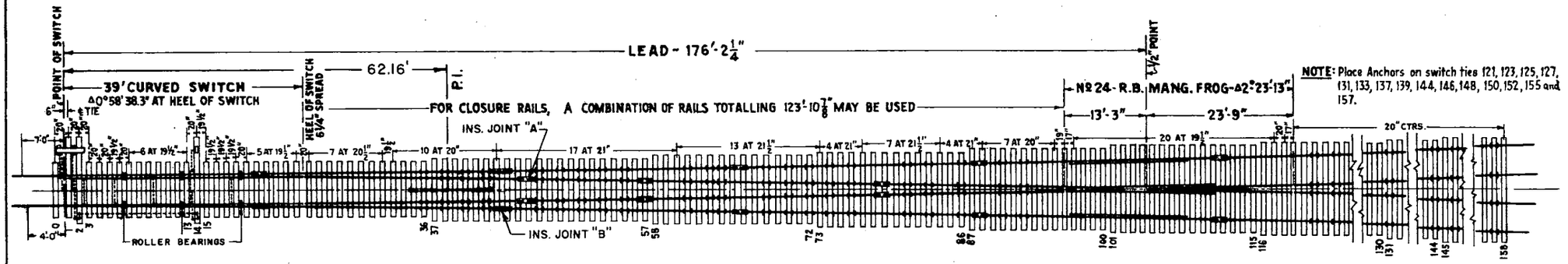
ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1972

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. C. Harrington, Vice President, Operations

Revised 5-75, 2-76, 7-78, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2067.3

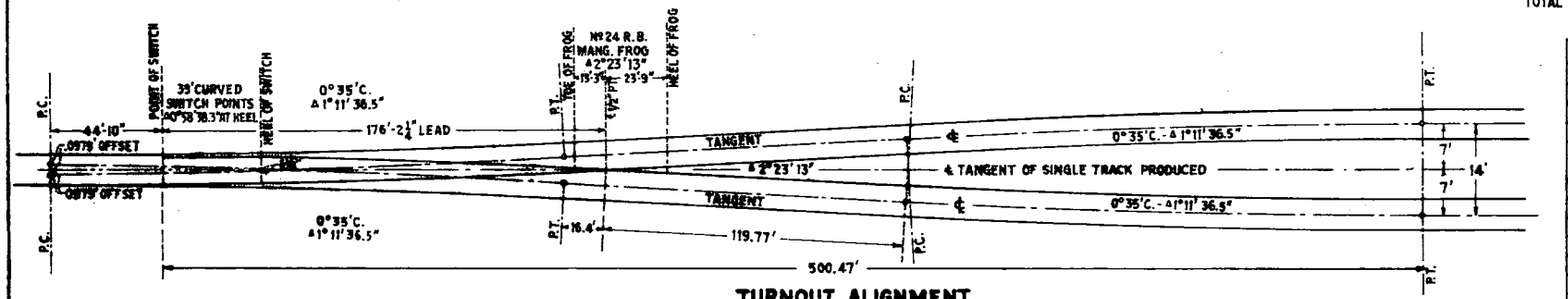
Dwg. Nº C-2067.4



NOTE:
Place center of guard rail as close as possible but ahead of 1/2" point.
1 7/8" flangeway opening must be maintained.
Use 19'-6" guard rail plan C-6015.

APPLICATION OF GRIP RAIL ANCHORS AT TURNOUT

LOCATION OF GRIP RAIL ANCHORS ON SWITCH TIES SHOWN ⊕ (320 ANCHORS)
ANCHORS ALSO TO BE PLACED ON BOTH SIDES OF ALTERNATE TIES FOR 4 RAIL LENGTHS AHEAD OF SWITCH AND FOR 4 RAIL LENGTHS BACK OF SWITCH TIES ON BOTH TRACKS. PLACE ANCHORS ONLY ON TIES WHERE APPLICATION CAN BE MADE ON BOTH RAILS. (480 ANCHORS)
TOTAL OF 800 GRIP RAIL ANCHORS REQUIRED FOR EACH TURNOUT.



TURNOUT ALIGNMENT

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. B.M.
2 PIECES	№ 1 & 2	8"x10"x14'	187
1 PIECE	№ 14	8"x10" - 14' "	93
2 PIECES	№ 0 & 13	8"x10' - 9' "	120
32 PIECES	№ 3 TO 12 INCL. AND 15 " 36 "	7"x 9" - 9' "	1512
21 "	№37 TO 57 "	7"x 9" - 10' "	1103
15 "	№58 " 72 "	7"x 9" - 11' "	866
14 "	№73 " 86 "	7"x 9" - 12' "	882
14 "	№87 " 100 "	7"x 9" - 13' "	956
15 "	№101 " 115 "	7"x 9" - 14' "	1103
15 "	№116 " 130 "	7"x 9" - 15' "	1181
14 "	№131 " 144 "	7"x 9" - 16' "	1176
14 "	№145 " 158 "	7"x 9" - 17' "	1250
159 PIECES		TOTAL FEET B.M.	10429

SWITCH TIES OCCUPY 266'-1" ℄ № 0 TO ℄ № 158

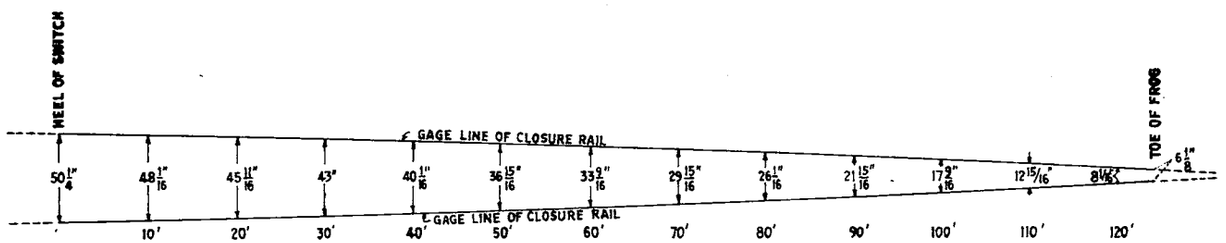


DIAGRAM SHOWING DISTANCES BETWEEN GAGE LINES OF CLOSURE RAILS AT VARIOUS POINTS BETWEEN HEEL OF SWITCH AND TOE OF FROG

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 24 EQUILATERAL TURNOUT

FOR R.E.132 LB. RAIL
USING 39 FT. CURVED SWITCH POINTS

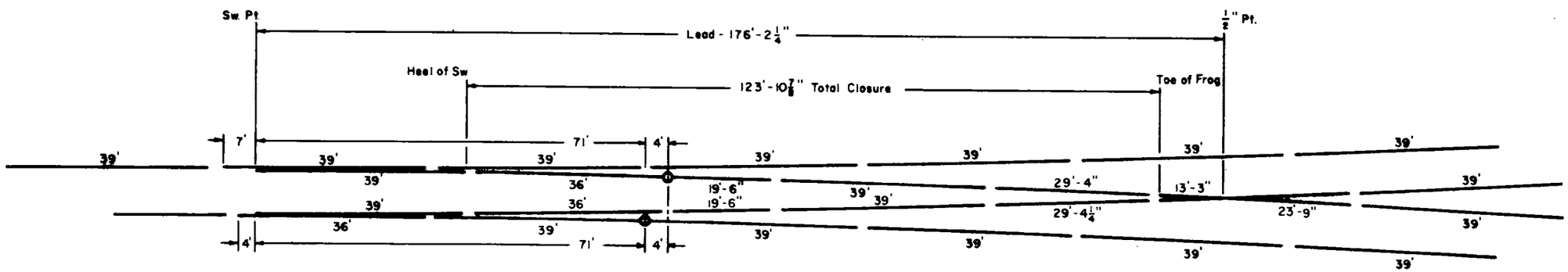
ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1972

Recommended: B.H. Anderson — Asst. Vice President Engineering

Approved: D.E. Ethington — Vice President, Operations

Revised 6-73, 2-76, 10-76, 7-78, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2068.4

DWG. № C-2068.5



LEGEND

— — STANDARD RAIL JOINT ADD 1/8"

—o— INSULATED " " " 3/8"

CLOSURE RAIL LENGTH

	INSULATED	NONINSULATED
	1 - 39'	1 - 39'
	1 - 36'	1 - 36'
	1 - 19'-6"	1 - 19'-6"
	1 - 29'-4"	1 - 29'-4 1/4"
	123'-10"	123'-10 1/4"
1 Insulated Jt. -	3/8"	
4 Standard Jts.-	1/2"	5 Jts.- 3/8"
TOTAL	123'-10 7/8"	123'-10 7/8"

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 24 EQUILATERAL TURNOUT

WITH INSULATED JOINTS

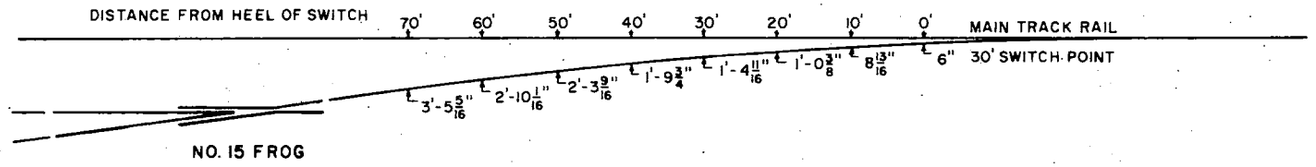
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1975

Recommended: B. H. Anderson, Asst. Vice President Engineering

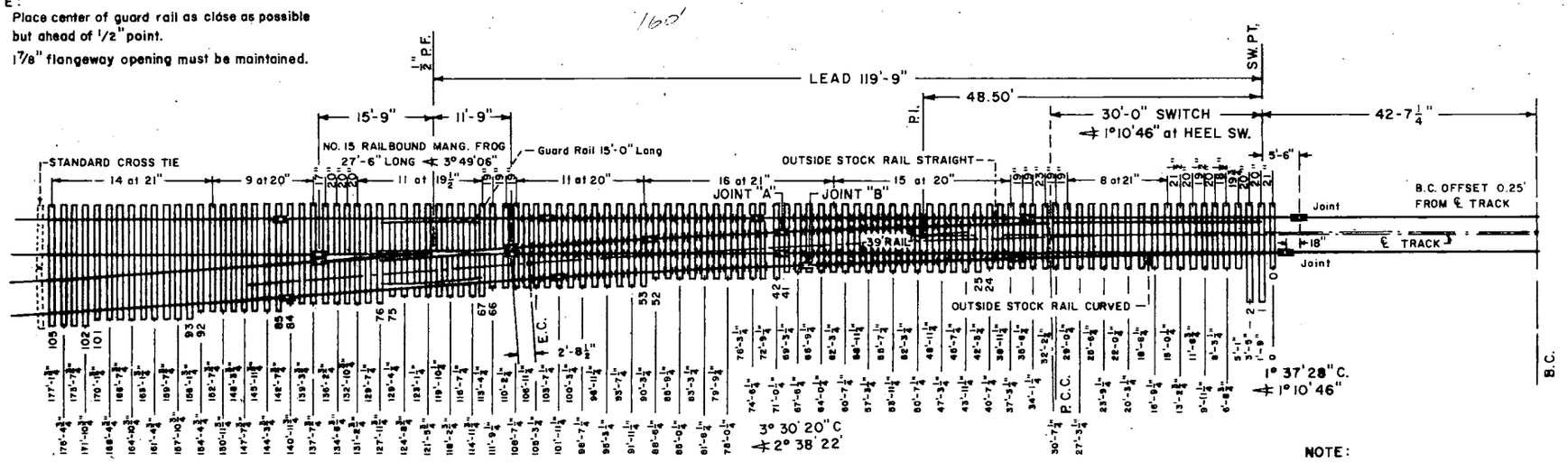
Approved: J. E. Thington, Vice President, Operations

Dwg. C-2068.0 Sh. 2

DIAGRAM SHOWING DISTANCES BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL



NOTE:
Place center of guard rail as close as possible but ahead of 1/2" point.
1 7/8" flangeway opening must be maintained.



BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT.BM.
1 PIECE	0	8"x10"x 9'-0"	60
2 "	1 AND 2	" " 14'-0"	187
3 PIECES	8"x 10" TIMBER	TOTAL FT. BM.	247

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
22 PIECES	3 TO 24 INCL.	7"x 9"x 9'-0"	1040
17 "	25 " 41 "	" " 10'-0"	893
11 "	42 " 52 "	" " 11'-0"	635
14 "	53 " 66 "	" " 12'-0"	882
9 "	67 " 75 "	" " 13'-0"	614
9 "	76 " 84 "	" " 14'-0"	662
8 "	85 " 92 "	" " 15'-0"	630
9 "	93 " 101 "	" " 16'-0"	756
4 "	102 " 105 "	" " 17'-0"	357
103 PIECES	7"x 9" SWITCH TIES	TOTAL FT. BM.	6469

APPLICATION OF GRIP RAIL ANCHORS AT TURNOUT

Location of grip rail anchors on switch ties shown ⊡ (264 Anchors) anchors also to be boxed on 200 ties ahead of switch and for 200 ties back of frog on both main track and side track. Place anchors only on ties where application can be made on both rails. (2400 anchors). Total of 2664 grip rail anchors required at each turnout.

PROPERTIES OF TURNOUT

Frog Number	15
Frog Angle	3° 49'06"
Frog Length	27'-6"
Length of Switch	30'-0"
Heel Spread of Switch	6"
Angle at Heel of Switch	1° 10'46"
Lead Actual	119'-9"
Degree of Curve	3° 30'20"
Central Angle	2° 38'22"
Straight Closure Rail	78'-0 3/8"
Curved Closure Rail	78'-1 5/8"

NOTE:
Short rails to be used ahead of switch and back of frog in such manner as to effect 19 1/2 foot staggered joints as near the the turnout as possible
Turnout ties occupy 177 feet along track.
In automatic block signal territory the arrangement of long and short rails shall be such as to make joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

NOTE:
Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 15 TURNOUT
FOR R.E. 115 LB. RAIL
USING 30 FT. CURVED SWITCH

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1975

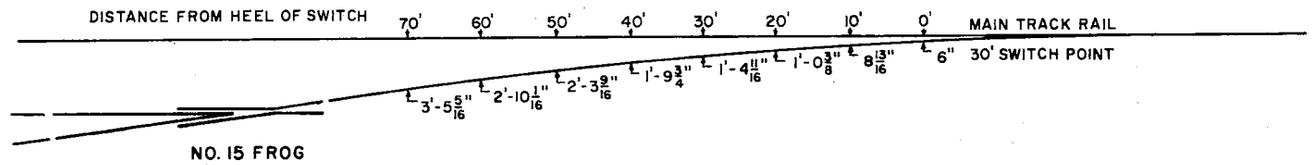
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: J. C. B. Thompson, Vice President, Operations

Revised 2-76, 10-76, 7-78, 4-80, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2070.4

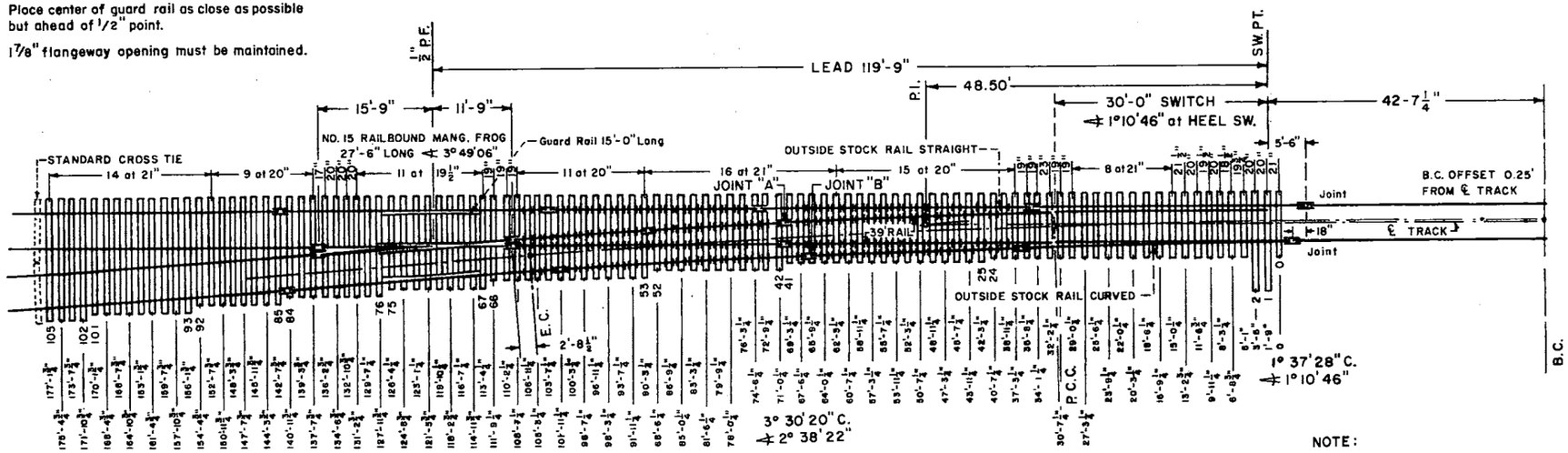
Dwg. № C-2070.5

DIAGRAM SHOWING DISTANCES BETWEEN GAGE LINES OF MAIN TRACK RAIL AND TURNOUT RAIL



NOTE:
Place center of guard rail as close as possible but ahead of 1/2" point.

1 7/8" flangeway opening must be maintained.



BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT.BM.
1 PIECE	0	8" x 10" x 9'-0"	60
2 "	1 AND 2	" " 14'-0"	187
3 PIECES	8" x 10" TIMBER	TOTAL FT. BM.	247

BILL OF TIES			
NUMBER	DESCRIPTION	SIZE	FT. BM.
22 PIECES	3 TO 24 INCL.	7" x 9" x 9'-0"	1040
17 "	25 " 41 "	" " 10'-0"	893
11 "	42 " 52 "	" " 11'-0"	635
14 "	53 " 66 "	" " 12'-0"	882
9 "	67 " 75 "	" " 13'-0"	614
9 "	76 " 84 "	" " 14'-0"	662
8 "	85 " 92 "	" " 15'-0"	630
9 "	93 " 101 "	" " 16'-0"	756
4 "	102 " 105 "	" " 17'-0"	357
103 PIECES	7" x 9" SWITCH TIES	TOTAL FT. BM.	6469

APPLICATION OF GRIP RAIL ANCHORS AT TURNOUT

Location of grip rail anchors on switch ties shown (264 Anchors) anchors also to be boxed on 200 ties ahead of switch and for 200 ties back of frog on both main track and side track. Place anchors only on ties where application can be made on both rails. (2400 anchors). Total of 2664 grip rail anchors required at each turnout.

PROPERTIES OF TURNOUT

Frog Number	15
Frog Angle	3° 49'06"
Frog Length	27'-6"
Length of Switch	30'-0"
Heel Spread of Switch	6"
Angle at Heel of Switch	1° 10'46"
Lead Actual	119'-9"
Degree of Curve	3° 30'20"
Central Angle	2°38'22"
Straight Closure Rail	78'-0 3/8"
Curved Closure Rail	78'-1 5/8"

NOTE:
Short rails to be used ahead of switch and back of frog in such manner as to effect 19 1/2 foot staggered joints as near the the turnout as possible Turnout ties occupy 177 feet along track.
In automatic block signal territory the arrangement of long and short rails shall be such as to make joints "A" and "B" as nearly opposite as possible but not more than 4 feet apart measured along the turnout.

NOTE:
Switch Stand shall be placed so connecting rod will be in tension when switch is set for main line, except in locations, such as Ladder tracks, where space between tracks will not permit.

Use of this turnout requires approval of Asst. Vice President Engineering.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 15 TURNOUT
FOR R.E. 132 LB. RAIL
USING 30 FT. CURVED SWITCH

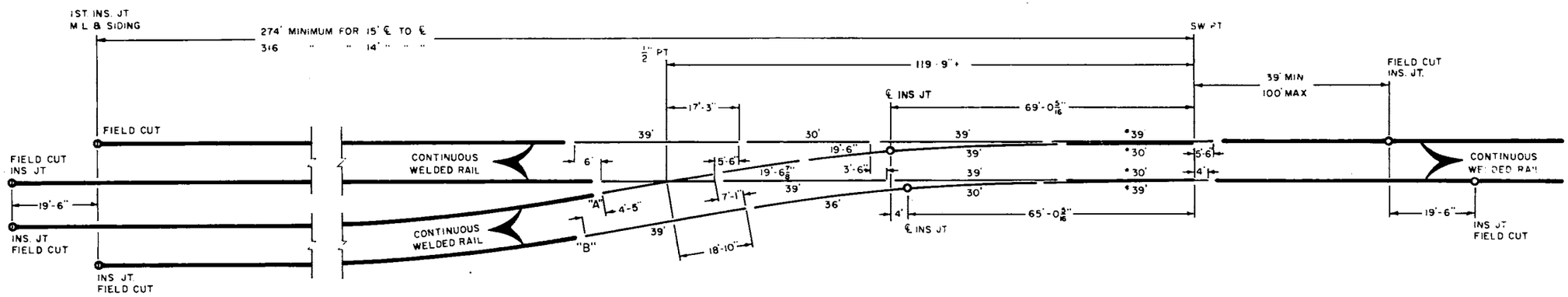
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1975

Recommended
B.H. Anderson
Asst. Vice President Engineering

Approved
Vice President, Operations

Dwg. № C-2071.5

Revised 2-76, 10-76, 7-78, 4-80, 8-81
THIS PLAN SUPERSEDES PLAN NO. C-2071.4



NOTE:

IF SIDING IS BOLTED RAIL ADD ONE 19'-6" & ONE 39' RAIL TO HEEL OF FROG AT POINT "A" AND ONE 39' RAIL AT POINT "B."

CLOSURE RAIL LENGTH

	CURVED	STRAIGHT
	1 - 39'	2 - 39'
	1 - 19'-6 7/8"	
	1 - 19'-6"	
1 Insulated Jt. -	3/8"	
3 Standard Jt. -	3 1/8"	3 Jt - 3/8"
TOTAL	78'-1 5/8"	78'-0 3/8"

TURNOUT RAIL LENGTHS

6 - 39'
1 - 36'
2 - 30'
1 - 19'-6 7/8"
1 - 19'-6"
TOTAL ▲11 RAILS (SEE NOTE)

▲ IF FIELD CUT (FROM 39' RAILS) 11 RAILS SHALL BE FURNISHED 13 IF SIDING IS BOLTED RAIL.

* 30 FT CURVED SWITCH (INCLUDES) 2 - 39' UNDERCUT STOCK RAILS & 2 - 30' SWITCH POINTS

LEGEND

— — STANDARD RAIL JOINT ADD 1/8"
—o— INSULATED " " " 3/8"

BURLINGTON NORTHERN INC
STANDARD PLAN

TYPICAL LAYOUT Nº 15 TURNOUT
FOR USE IN
115-132 LB C.T.C. CONTINUOUS WELDED RAIL TERRITORY

ENGINEERING DIVISION, ST PAUL, MINN OCT 1975

Recommended — Asst Vice President Engineering
Approved — Vice President, Operations

Revised 7-76
THIS PLAN SUPERSEDES PLAN NO. C-2071.0

Dwg. C-2071.1 Sh. 2

PROPER USAGE OF THE VARIOUS TYPES OF SWITCH STANDS

Burlington Northern Standard Plan No. C-2154.0 has been issued showing type of switch stands to be used at specific locations. The plan lists under general instructions the following stands which are the new Burlington Northern Standards:

Type	Plan No.	Mfr.
Hi-Target Drop Lever	C-2150	Racor 112-G
Lo-Target Drop Lever	C-2153	Racor 36-D
Automatic Switch Stand	C-2151	PM 518
Gearless Switch Stand	C-2152	Racor 40
Pavement Stand	None	Bethlehem 1222
H.B. Derail Stand	None	Hayes Sw. Stand

These stands are the only stands which will be purchased new by the Burlington Northern. This will be done after existing stocks of secondhand and re-manufactured stands are depleted to minimum levels. Maintenance personnel requiring replacement stands or stands for new track construction should prepare requisitions for replacement in kind or stands based on predecessor standards for the territory involved. Requisitions should also include reference to the proper new standard switch stand as shown on Plan C-2154.0. Material managers receiving requisitions for switch stands should make every effort to furnish material based on predecessor standards first to accomplish the depletion of existing stock. In the event that secondhand or re-manufactured stands are not available, new stands per Plan C-2154.0 should be furnished.

Material locations serving territories which encompass two predecessor railroads should exercise care not to furnish material not common to the using location, such as furnishing a G.N. Hi-target stand for use on N.P. territory.

Any questions regarding identification or use of switch stands and their accessories should be directed to the Track Engineering Section in St. Paul.

Office of Assistant Vice President-Engineering
Burlington Northern Inc.

St. Paul, Minnesota
July 14, 1972

PROPER USAGE OF THE VARIOUS TYPES OF SIGNS

Mr. I. C. Ethington's letter of August 2, 1971, established the policy for the replacement of signs, as follows: "It will not be permissible to make a wholesale replacement of signs with the new standard. With the exception of speed signs, the existing signs throughout a given territory will be replaced with the new standard on an individual basis, as necessary. Speed signs shall be replaced in kind on an individual basis as required, until such time as the Rules and Safety/Time Table Committee completes their review of a given area at which replacement to the new standard speed signs will be made on a subdivision or larger basis."

The System Rules Committee in its letter of June 5, 1972 made the following suggestion: "Specifications for numerous signs call for signs to be placed 'on right-hand side.' To provide for locating signs when placed for movements in double track or two main track territory, where standard clearance does not permit placing the sign on right-hand side of track governed, place on left hand side and issue bulletin to so indicate. In three or more main track territory, required speed should be carried in timetable instructions for tracks where signs cannot be displayed."

Office of Assistant Vice President-Engineering
Burlington Northern Inc.
St. Paul, Minnesota

August 17, 1972

INSTRUCTIONS FOR INSTALLING AND ORDERING

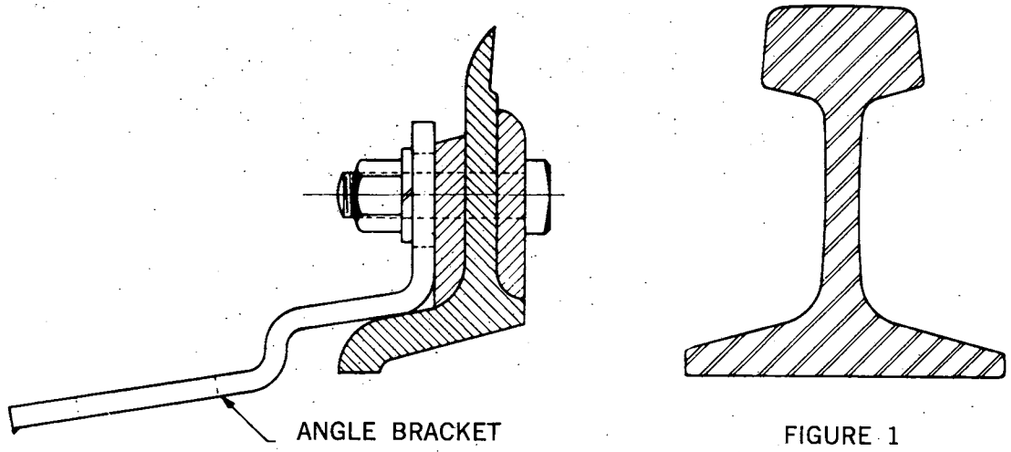


FIGURE 1

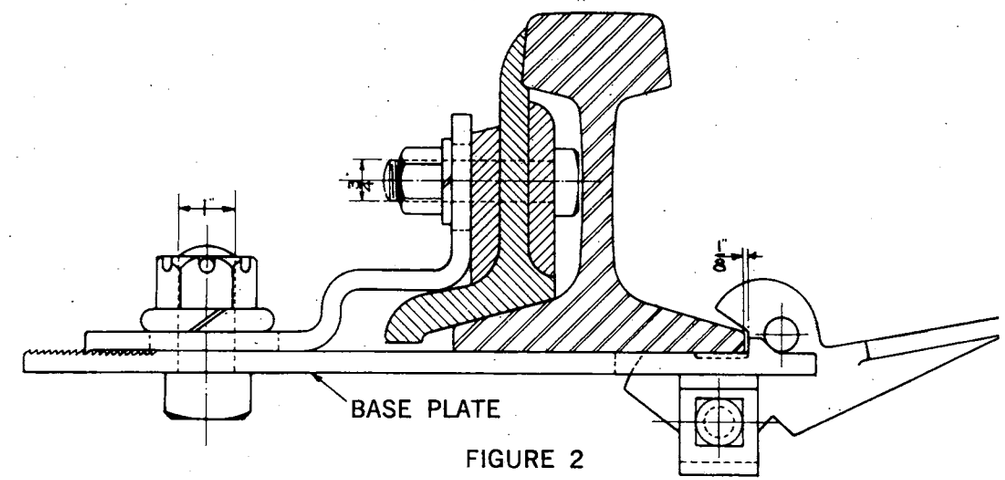


FIGURE 2

Remove base plate and apply angle bracket with switch point in open position. Square angle bracket and pull nut up tight as shown above.

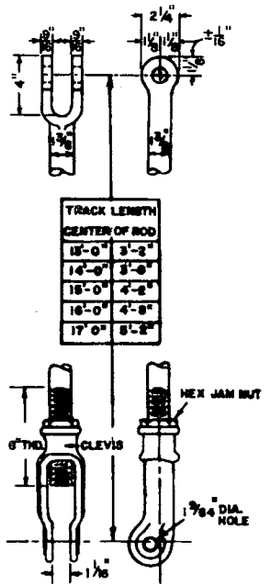
Close switch point and assemble base plate to angle bracket with foot pedal in the "up" position, allowing about ⅛" clearance between outside base of rail and the shoulder on the base plate before bolt is tightened. Tighten 1" bolt until angle bracket and base plate faces are in full contact.

Step on foot pedal and throw switch to open position. The foot pedal remains in "down" position until switch point is closed; when point is closed the base plate will snap up and lock switch and cannot be opened until foot pedal is again pushed to "down" position.

ORDERING REFERENCE:

Automatic Switch Point Lock #1
(For 5-1/2" RAIL BASE & UNDER)
Shipping Weight — 13 lbs.

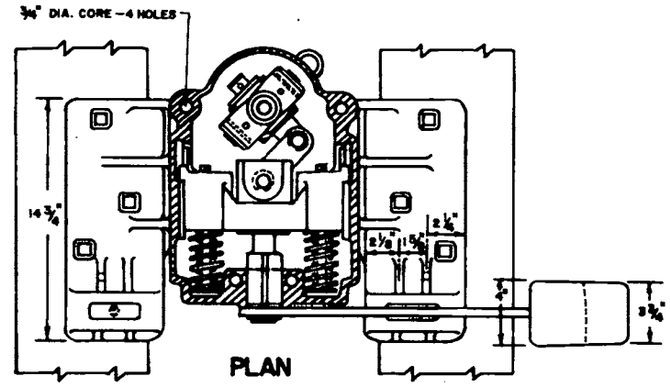
Automatic Switch Point Lock #2
(For RAIL BASE OVER 5-1/2")
Shipping Weight — 15 lbs.



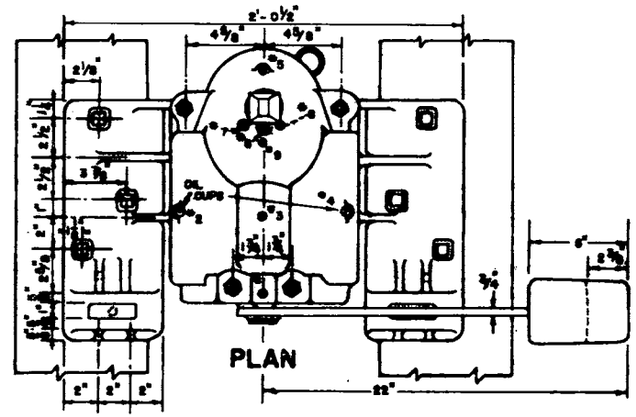
TRACK LENGTH	CENTER OF ROD
13'-0"	3'-2"
14'-0"	3'-6"
15'-0"	4'-2"
16'-0"	4'-6"
17'-0"	5'-2"

CONNECTING ROD

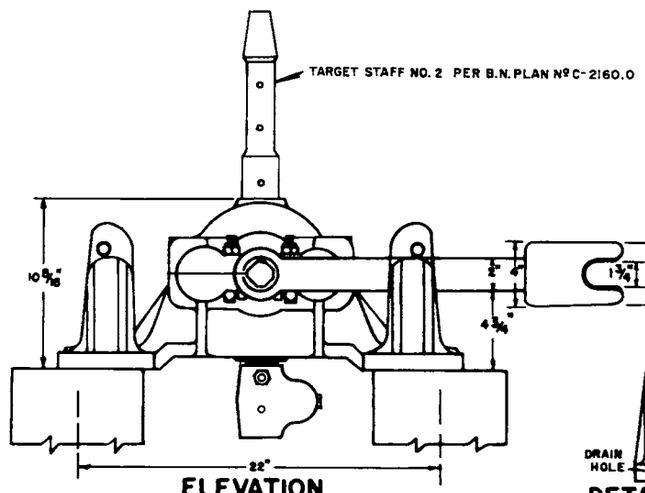
STYLE 2 PER B.N
DWG. C-2156.2



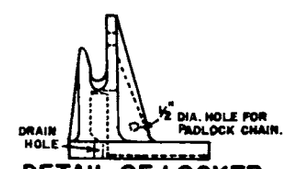
PLAN
(TOP CASTING REMOVED)



PLAN



ELEVATION



DETAIL OF LOCKER

NOTE:
SWITCH STAND SHALL BE FASTENED TO H.B. TIES USING 5/8" x 7" SCREWDRIVE SPIKES. PREBORE 1/2" DIA. HOLES.

BURLINGTON NORTHERN INC.
STANDARD PLAN

AUTOMATIC SAFETY SWITCH STAND

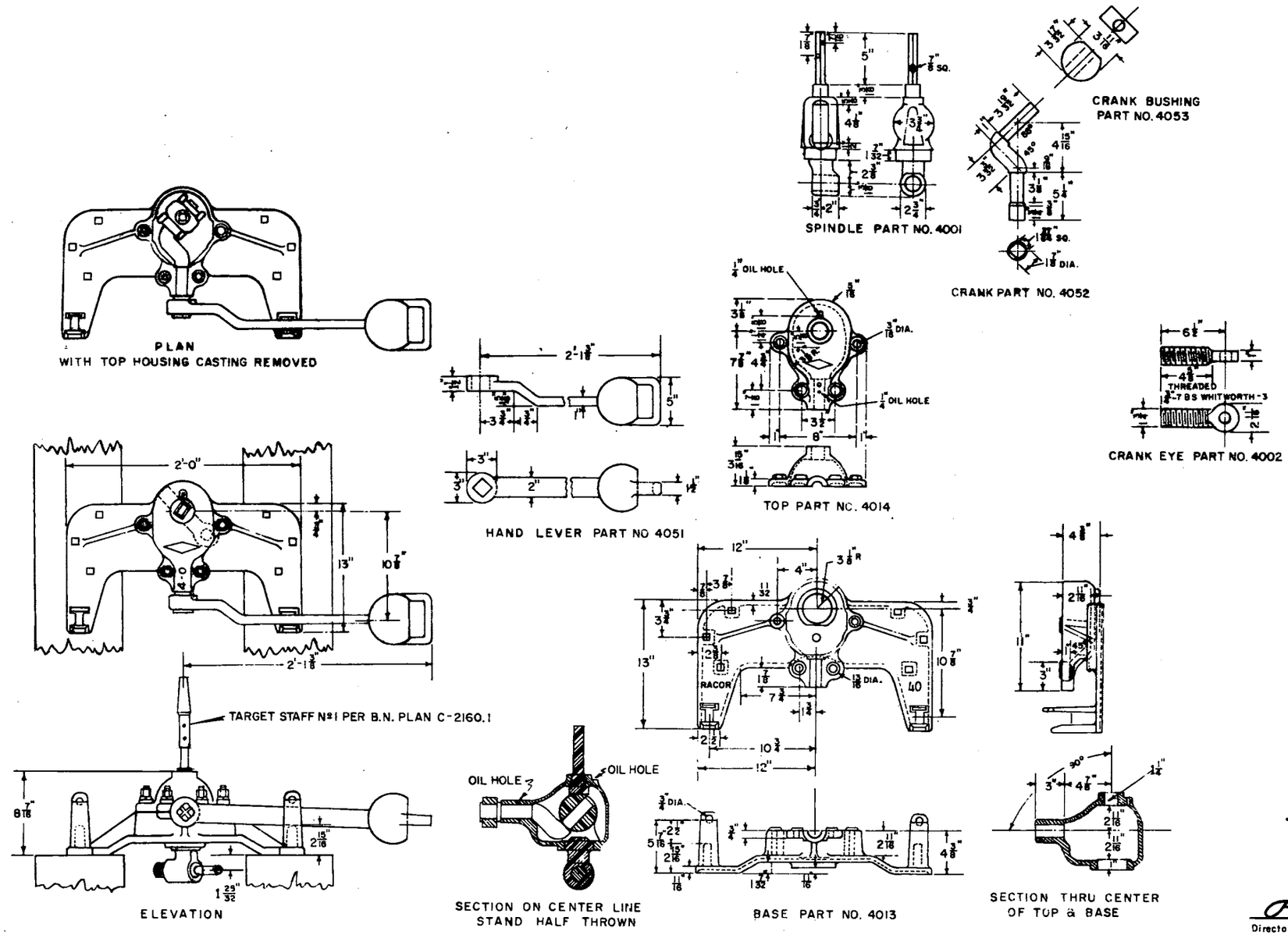
ENGINEERING DIVISION, ST. PAUL, MINN. SEPT. ,1974

Recommended — B.H. Anderson — Asst. Vice President Engineering

Approved — D. M. Lowenstein — Vice President, Operations

Dwg. Nº C-2151.2

THIS PLAN SUPERSEDES PLAN NO. C-2151.1 PER PETTIBONE PLAN NO. 518



NOTE:
USE STYLE Nº1 CONNECTING ROD PER B.N.INC.
STANDARD PLAN Nº C-2156.1 .

BURLINGTON NORTHERN INC.
STANDARD PLAN

RACOR STYLE 40 PARALLEL THROW GEARLESS SWITCH STAND

ENGINEERING DIVISION, ST. PAUL, MINN. AUG 1975

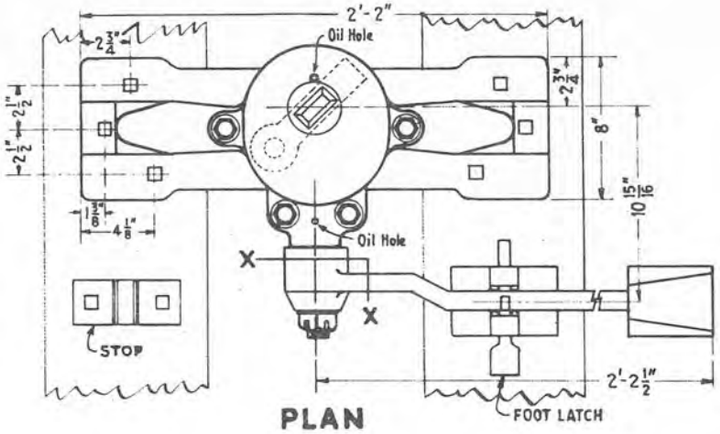
Recommended
F. A. Kempe
Director Track Engineering

Approved
N. M. Lowenstein
Vice President, Operations

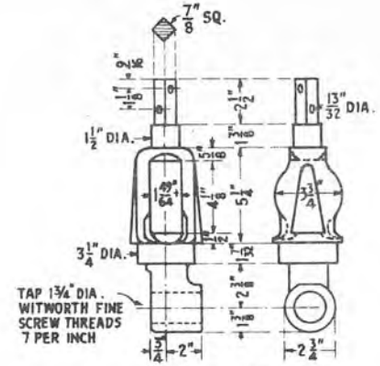
B. H. Anderson
Asst. Vice President Engineering

Dwg. Nº C-2152.2

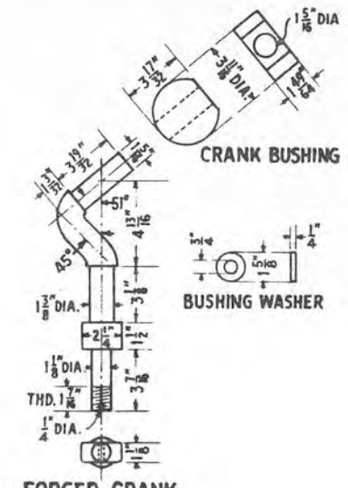
THIS PLAN SUPERSEDES PLAN Nº C-2152.1



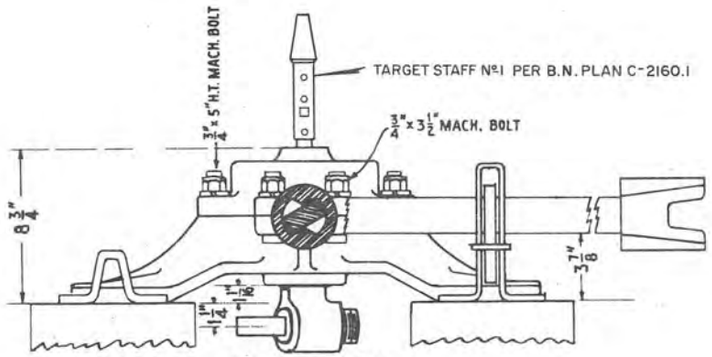
PLAN



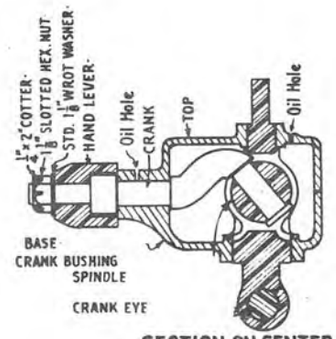
FORGED SPINDLE



FORGED CRANK

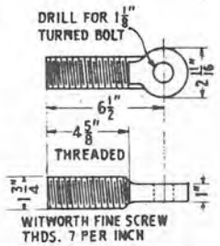


ELEVATION
AND SECTION X-X



SECTION ON CENTER LINE
STAND HALF THROWN

NOTE:
SWITCH STAND SHALL BE FASTENED TO H.B. TIES USING 5/8" x 7" SCREWDRIVE SPIKES. PREBORE 1/2" DIA. HOLES.



FORGED CRANK EYE

NOTE:
CONNECTING ROD TO BE PER B.N. INC. STANDARD PLAN C-2156.0 STYLE Nº 1.

BURLINGTON NORTHERN INC.
STANDARD PLAN

RACOR STYLE 36D PARALLEL THROW GEARLESS SWITCH STAND

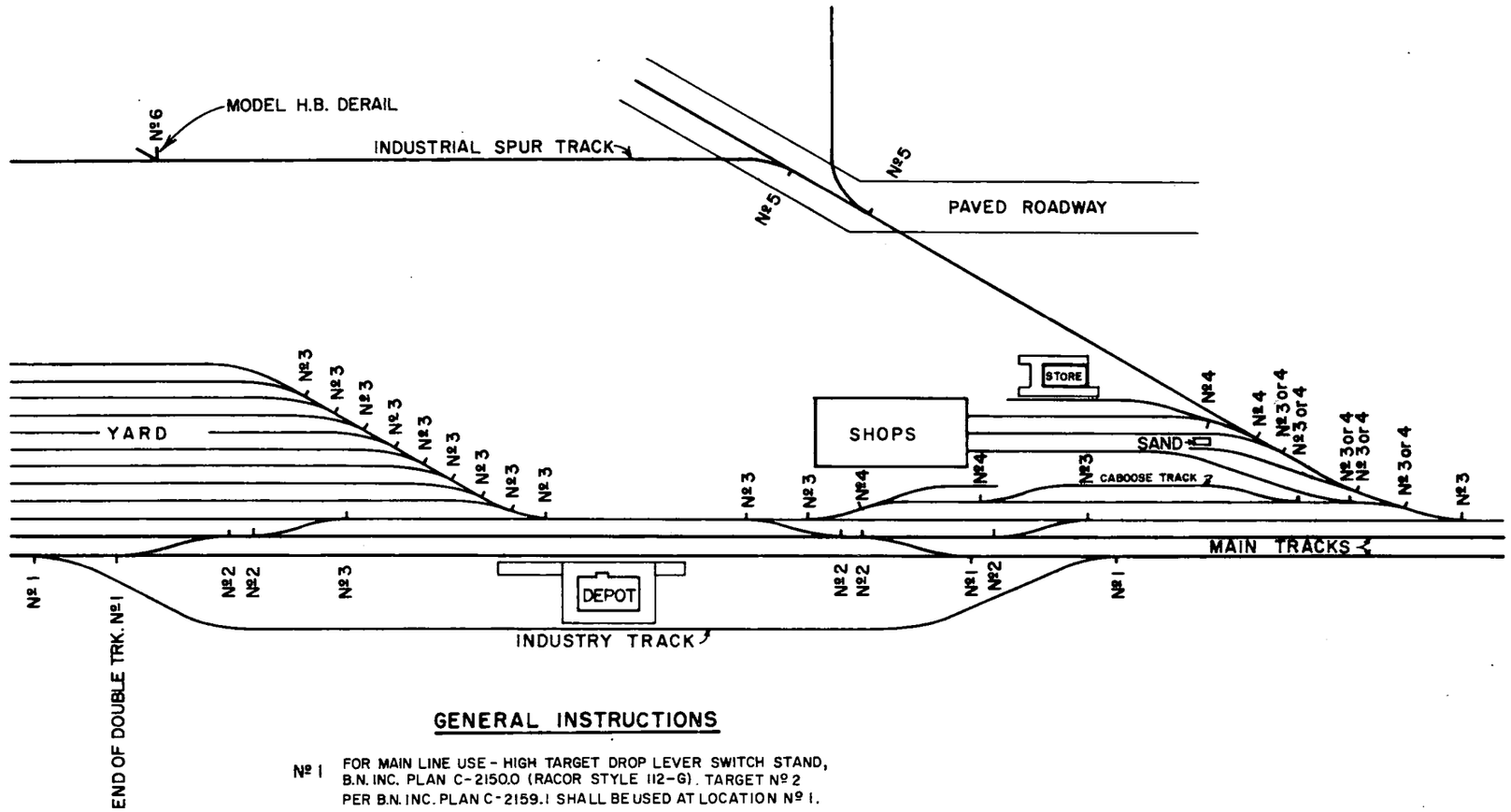
ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. Nº C-2153.2

THIS PLAN SUPERSEDES PLAN NO C-2153.1



GENERAL INSTRUCTIONS

Nº 1 FOR MAIN LINE USE - HIGH TARGET DROP LEVER SWITCH STAND, B.N. INC. PLAN C-2150.0 (RACOR STYLE 112-G). TARGET Nº 2 PER B.N. INC. PLAN C-2159.1 SHALL BE USED AT LOCATION Nº 1.

Nº 2 FOR MAIN LINE USE - WHERE LOW TARGET DROP LEVER SWITCH STANDS ARE REQUIRED, B.N. INC. PLAN C-2153 (RACOR STYLE 36-D). RED AND GREEN TARGET COMBINATION SHALL BE USED AT LOCATION Nº 2, TARGET Nº 1 PER B.N. INC. PLAN Nº C-2159.1.

Nº 3 FOR YARD USE ONLY - AUTOMATIC SWITCH STAND, IN IMPORTANT TRACKS SUCH THOROUGHFARES AND LADDERS, B.N. INC. PLAN C-2151 (PETTIBONE 518) GREEN AND YELLOW OR RED AND GREEN TARGET COMBINATION MAY BE USED AT LOCATION Nº 3, TARGET Nº 1 PER B.N. INC. PLAN C-2159.1.

Nº 4 FOR YARD USE - UNIMPORTANT OR INSIDE TRACKS, B.N. INC. PLAN C-2152 (RACOR STYLE 40) GREEN AND YELLOW OR RED AND GREEN TARGET COMBINATION MAY BE USED AT LOCATION Nº 4, TARGET Nº 1 PER B.N. INC. PLAN Nº C-2159.1.

Nº 5 PAVEMENT INSTALLATIONS ONLY - (BETHLEHEM MODEL 1222)

Nº 6 HAYES OPERATING STAND FOR HAYES H.B. DERAILS ONLY. (SEE B.N. INC. PLAN C-2157.0).

BURLINGTON NORTHERN INC.

STANDARD PLAN

PLAN SHOWING WHERE DIFFERENT SWITCH STANDS SHOULD BE USED

ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1975

Recommended

Asst. Vice President Engineering

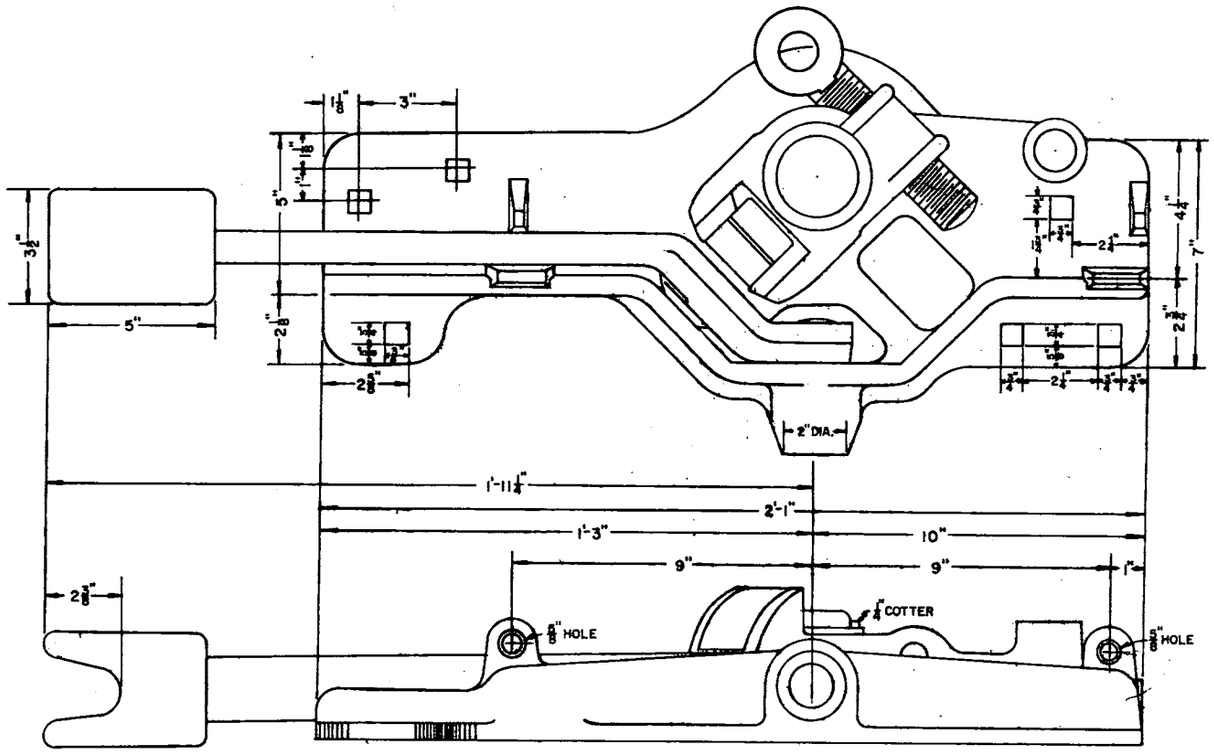
Approved

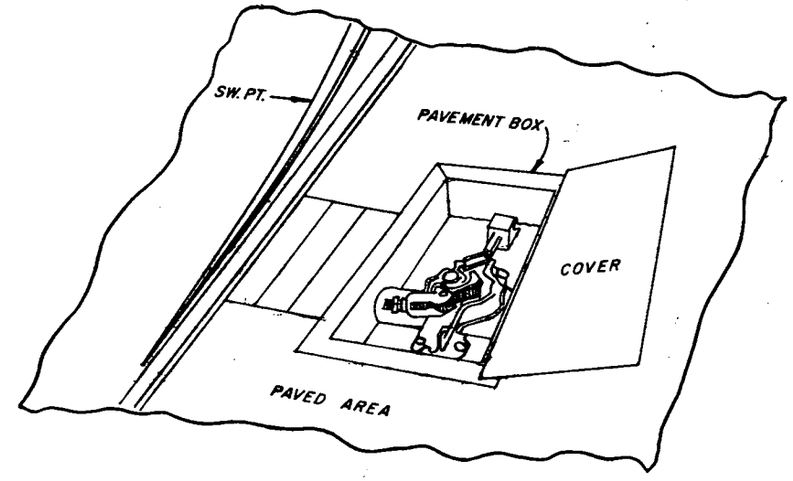
Vice President, Operations

Dwg. C-2154.1

THIS PLAN SUPERSEDES PLAN Nº C-2154.0

PLAN VIEW



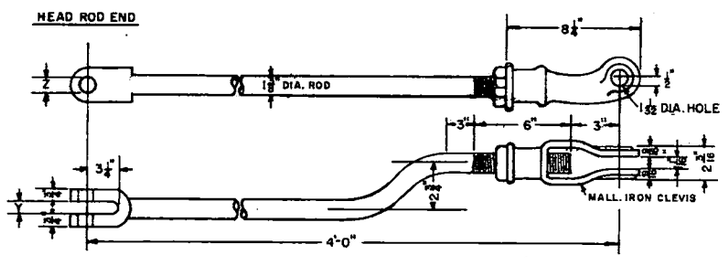


NOTE:
VIEW SHOWING APPLICATION OF SWITCH STAND IN PAVEMENT.

ELEVATION

NOTE:
FOR JAW OPENING, BOLT HOLE SIZE AND HEAD ROD BOLTS SEE B.N. INC. PLAN Nº C-2156.0.

HEAD ROD END



CONNECTING ROD 11UA

BURLINGTON NORTHERN INC.
STANDARD PLAN

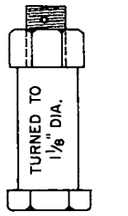
BETHLEHEM MODEL 1222
PAVEMENT TYPE SWITCH STAND

ENGINEERING DIVISION, ST. PAUL, MINN. MAY, 1972.

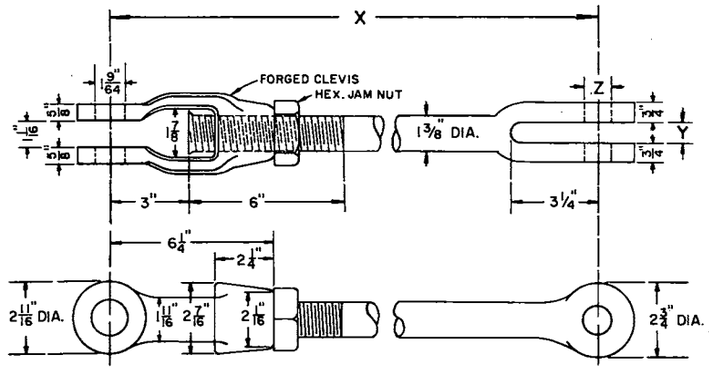
Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. Nº C-2155.0



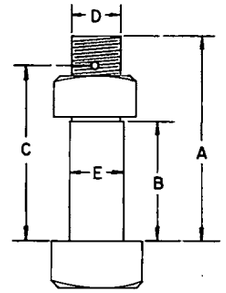
SHOULDER BOLT



SWITCH STAND END

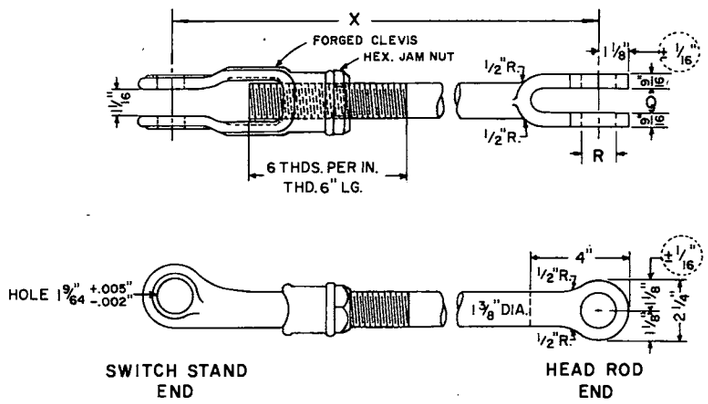
HEAD ROD END

STYLE Nº 1 CONNECTING ROD



HEAD ROD BOLT

TABLE OF DIMENSIONS STYLE Nº 1 CONNECTING ROD									
ROAD	TYPE ROD	X	Y	Z	A	B	C	D	E
B.N. INC	ALL		7/8"	1 9/64"	4"	2 5/16"	3 3/8"	1 1/8"	TURNED TO FIT HEAD ROD DRILLING USED BY FORMER ROADS
C.B.&Q.R.R.	HB		1 1/16"	1 9/64"	4"	2 5/16"	3 3/8"	1"	
	HB		13/16"	61/64"	4"	2 7/16"	3 11/16"	7/8"	
G.N. RY.	ALL		7/8"	1 1/16"	4"	2 5/16"	3 3/8"	1"	
N.P. RY.	A		1 1/16"	1 9/64"	4 1/4"	2 1/2"	4"	1 1/8"	
	B		1 1/16"	57/64"	4"	2 1/4"	3 3/4"	7/8"	
	C		1 5/16"	1 9/64"	4 1/2"	2 3/4"	4 1/4"	1 1/8	
S.P.&S. RY.	A		7/8"	1 9/64"	4 1/16"	2 3/8"	3 7/16"	1 1/8"	
	B		1 5/16"	1 9/64"	4 1/2"	2 3/4"	4 1/4"	1 1/8"	



SWITCH STAND END

HEAD ROD END

STYLE Nº 2 CONNECTING ROD

TABLE OF DIMENSIONS STYLE Nº 2 CONNECTING ROD									
ROAD		X	Q	R	A	B	C	D	E
B.N. INC.	ALL		7/8	1 9/64"	3 1/2"	1 7/8"	2 7/8"	1 1/8"	TURNED TO FIT HEAD ROD DRILLING USED BY FORMER ROADS.
C.B.&Q.R.R.	HB		1 1/16"	1 9/64"	3 1/2"	1 7/8"	2 7/8"	1"	
	HB		13/16"	61/64"	3 1/2"	1 15/16"	3 3/16"	7/8"	
G.N. RY.	ALL		7/8"	1 1/16"	3 1/2"	1 7/8"	2 7/8"	1	
N.P. RY.	A		1 1/16"	1 9/64"	3 3/4"	2	3 1/2"	1 1/8"	
	B		1 1/16"	57/64"	3 1/2"	1 3/4"	3 1/4"	7/8"	
	C		1 5/16"	1 9/64"	4"	2 1/2"	3 3/4"	1 1/8"	
S.P.&S.RY.	A		7/8"	1 9/64"	3 9/16"	1 7/8"	2 15/16"	1 1/8"	
	B		1 5/16"	1 9/64"	4"	2 1/4"	3 3/4"	1 1/8"	

LOW TARGET SWITCH STANDS	
TRACK CENTERS	X= LENGTH OF RODS
13'-0"	3'-2"
14'-0"	3'-8"
15'-0	4'-2"
16'-0"	4'-8"
17'-0"	5'-2"

FOR B.N. INC. PLANS
Nº C-2151.0
Nº C-2152.0

HIGH TARGET SWITCH STANDS	
X= LENGTH OF ROD	
X	5'-9"

FOR B.N. INC. PLANS
Nº C-2150.0

LOW TARGET SWITCH STANDS USED WITH ELEC. SWITCH LOCKS	
X= LENGTH OF ROD	
X	5'-9"
*X	*3'-8"

*RESTRICTED CLEARANCE

BURLINGTON NORTHERN INC.
STANDARD PLAN

SWITCH STAND CONNECTING RODS

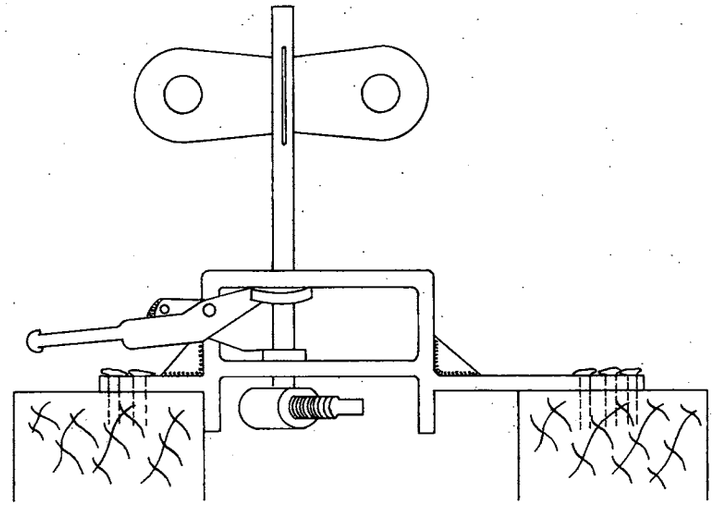
ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1972

Recommended
Asst. Vice President Engineering

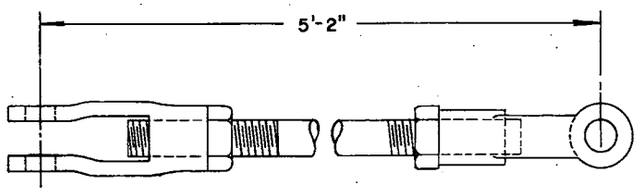
Approved
Vice President, Operations

Dwg Nº C-2156.3

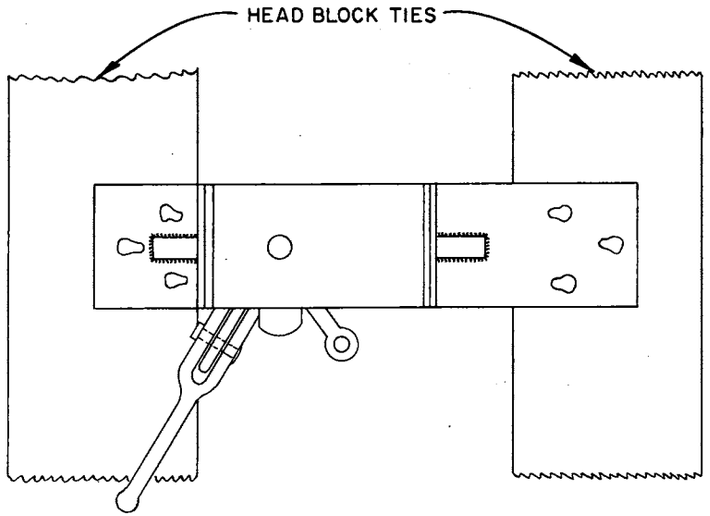
Revised 12-73, 9-74, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-2156.2



SIDE VIEW



CONNECTING ROD



TOP VIEW

NOTE:

ALL HAYES H.B. SLIDING DERAIL OPERATING STANDS SHALL BE ORDERED COMPLETE WITH MANUFACTURES STAFF, GREEN AND RED TARGETS, AND RODS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

HAYES DERAIL STAND

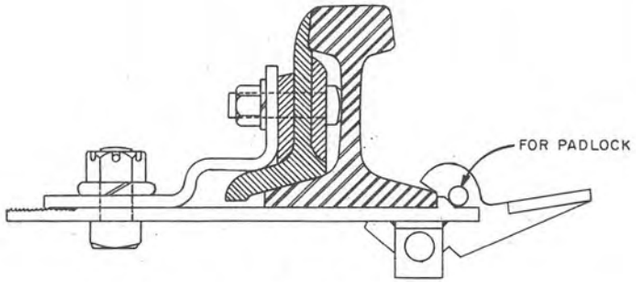
ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1972

Recommended — Asst. Vice President Engineering

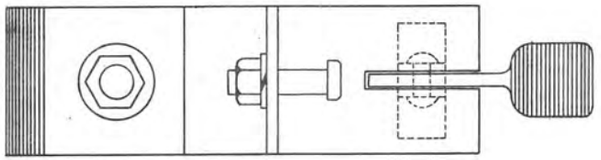
Approved — Vice President, Operations

Dwg. Nº C-2157.3

Revised 7-75, 7-78, 10-81
THIS PLAN SUPERSEDES PLAN C-2157.2

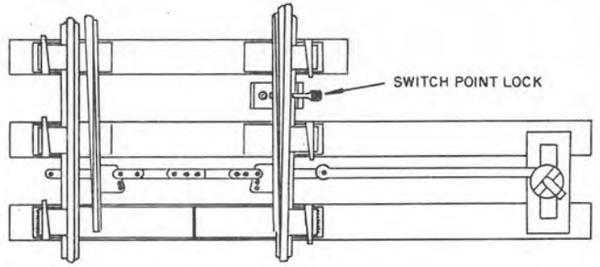


ELEVATION



PLAN

NOTE:
APPROXIMATE LOCATION OF SWITCH POINT LOCK IN TRACK. LOCATE AS NEAR POINT AS POSSIBLE WHERE THERE IS SUFFICIENT CLEARANCE.



LOCATION SKETCH

NOTE:
EXCEPT FOR SPRING SWITCHES, THOSE ELECTRICALLY CONTROLLED, AND THOSE MECHANICALLY CONTROLLED FROM OTHER THAN IMMEDIATE TRACK SIDE LOCATION, SWITCH POINT LOCKS PER STANDARD PLAN DRAWING C-2158.1 SHALL BE APPLIED ON ALL FACING POINT SWITCHES ON ALL MAIN LINE TRACKS WHERE THE AUTHORIZED SPEED IS 40 MPH OR MORE, AND ON ALL OTHER MAIN AND BRANCH LINE TRACK SWITCHES WITHIN 300 FEET OF A PUBLIC GRADE CROSSING.

ALL SWITCHES UTILIZING SWITCH POINT LOCKS SHALL HAVE THEIR HAND LEVER HANDLES PAINTED YELLOW.

BURLINGTON NORTHERN INC.
STANDARD PLAN

RAILS SWITCH POINT LOCK

ENGINEERING DIVISION ST. PAUL, MINN. MAY 1975

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

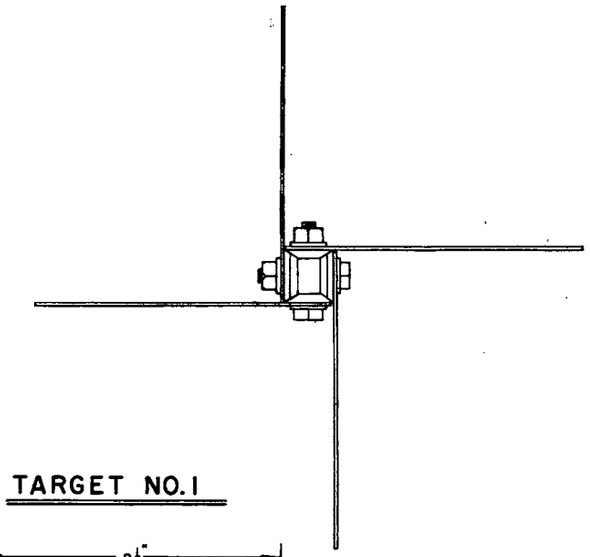
THIS PLAN SUPERSEDES PLAN NO. C-2158.1

Dwg. Nº C-2158.2

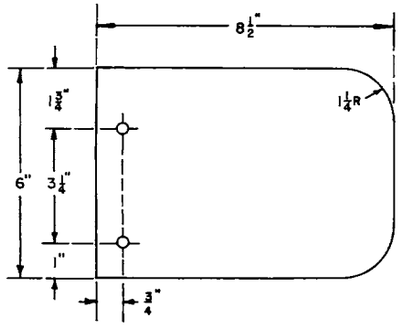
NOTE:

Targets shall be constructed of .081 inch 61S-T6 sheet aluminum. Punch holes in targets as shown for 3/8" bolts. Fasten target to switch stand staff using galvanized or cadmium plated 3/8" x 1 3/4" x 3 1/2" U-bolts or 3/8" x 2 1/2" machine bolts nuts, washers and nutlocks. After degreasing and treatment of aluminum apply red Nº 2272 scotchlite and green Nº 2277 scotchlite to both sides of target. On nonreflectorized target use Nº 9651 red scotchcal, Nº 9627 green and Nº 170-15 yellow scotchcal.

ASSEMBLY

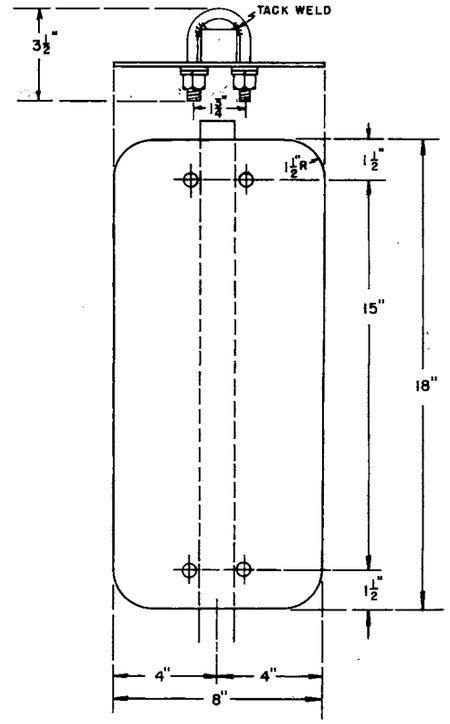


TARGET NO. 1



Red Nº 2272 Scotchlite (reflectorized)
Green Nº 2277 " "
Red Nº 9651 Scotchcal (nonreflectorized)
Green Nº 9627 " "
Yellow Nº 170-15 " "

THIS PLAN SUPERSEDES PLAN NO. C-2159.1

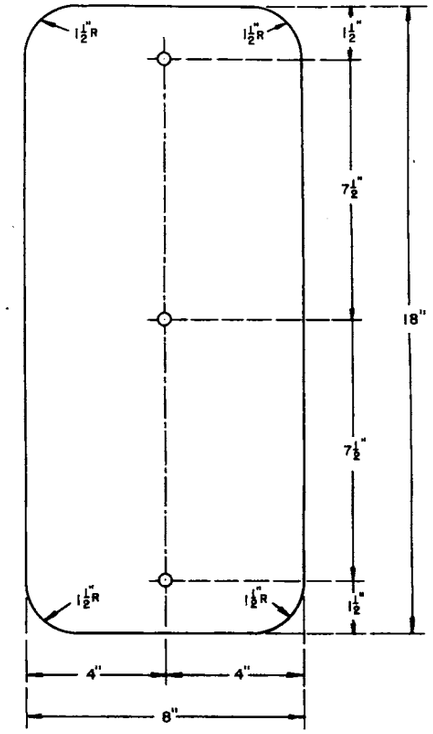


MODIFIED TARGET NO. 2

Order the above punching and fastenings to fit existing switch stand staffs that are not drilled to accept the Nº 2 target.

TARGET NO. 2

Red Nº 2272 Scotchlite (reflectorized)
Red Nº 9651 Scotchcal (nonreflectorized)



BURLINGTON NORTHERN INC.
STANDARD PLAN

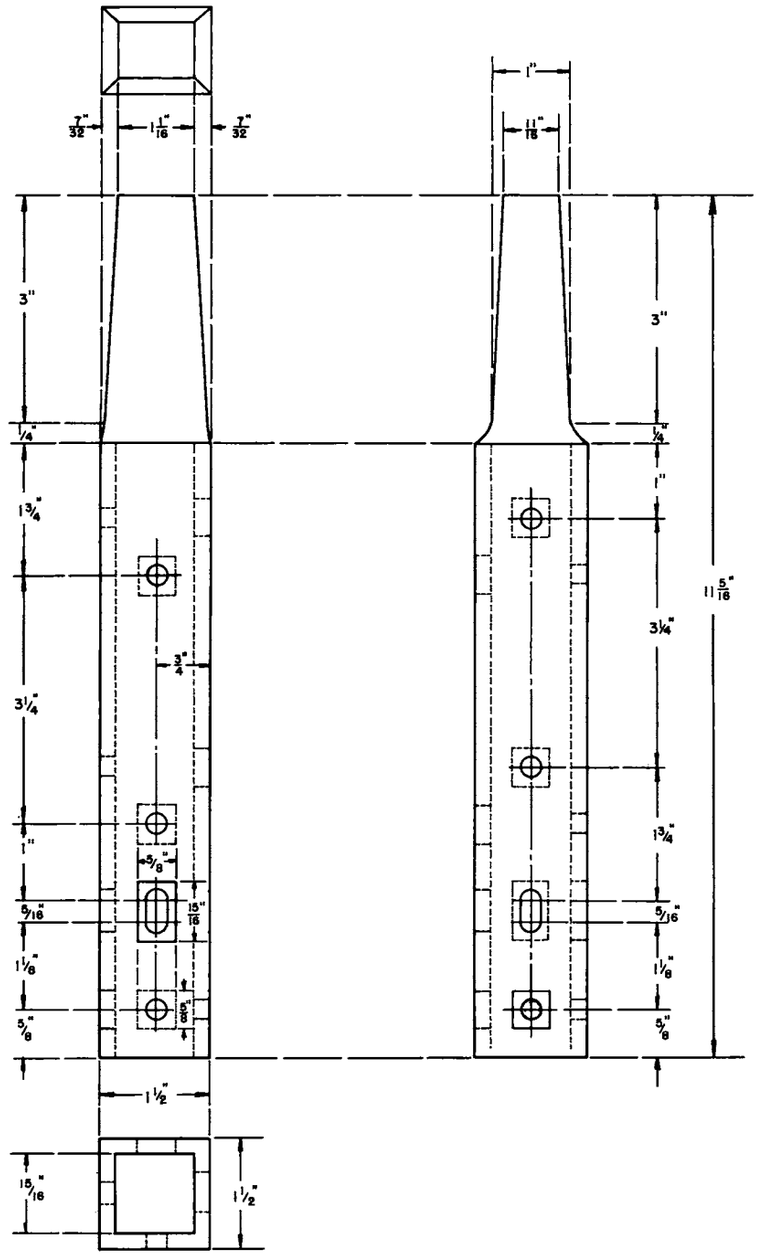
SWITCH STAND TARGETS

ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1975

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: J. C. B. Huington, Vice President, Operations

Dwg. Nº C-2159.2



TARGET STAFF Nº 1 TO BE USED WITH THE FOLLOWING SWITCH STANDS

TYPE OF SWITCH STAND	B.N. INC. PLAN NUMBER	C.B.&Q.R.R. PLAN NUMBER	G.N. RY. PLAN NUMBER	N.P. RY. PLAN NUMBER	S.P.&S. RY. PLAN NUMBER
RACOR 40	C-2152.0		3108-17-2		
RACOR 36D	C-2153.0	83656-B	3108-17-1		
RACOR AUTO. 22		102475	3108-15-1	T-17-11	
RACOR AUTO. 20B		67613-B			
RACOR AUTO. 20C			3108-16-1		

NOTE:
USE B.N. INC. TARGET Nº 1 STANDARD PLAN Nº C-2159.0 WITH TARGET STAFF Nº 1.

BURLINGTON NORTHERN INC.
STANDARD PLAN

SWITCH STAND TARGET STAFF Nº 1

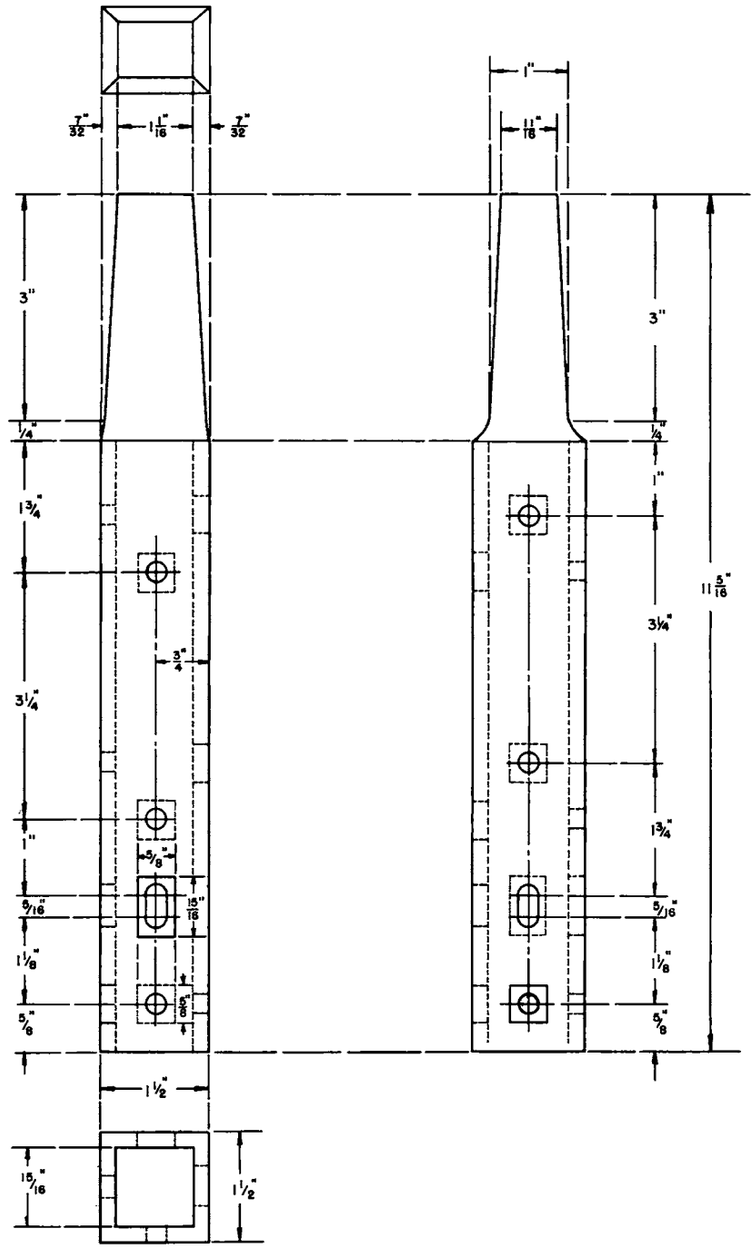
ENGINEERING DIVISION, ST. PAUL, MINN. NOV, 1973.

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. E. Livingston, Vice President, Operations

Dwg. Nº C-2160.1 Sheet 1

THIS PLAN SUPERSEDES PLAN NO. C-2160.0



TARGET STAFF Nº 1 TO BE USED WITH THE FOLLOWING SWITCH STANDS

TYPE OF SWITCH STAND	B.N. INC. PLAN NUMBER	C.B.&Q.R.R. PLAN NUMBER	G.N. RY. PLAN NUMBER	N.P. RY. PLAN NUMBER	S.P.&S. RY. PLAN NUMBER
RACOR 40	C-2152.0		3108-17-2		
RACOR 36D	C-2153.0	83656-B	3108-17-1		
RACOR AUTO. 22		102475	3108-15-1	T-17-11	
RACOR AUTO. 20B		67613-B			
RACOR AUTO. 20C			3108-16-1		

NOTE:
USE B.N. INC. TARGET Nº 1 STANDARD PLAN Nº C-2159.0 WITH TARGET STAFF Nº 1.

BURLINGTON NORTHERN INC.
STANDARD PLAN

SWITCH STAND TARGET STAFF Nº 1

ENGINEERING DIVISION, ST. PAUL, MINN. NOV, 1973.

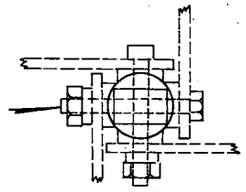
Recommended — B. H. Anderson, Asst. Vice President Engineering

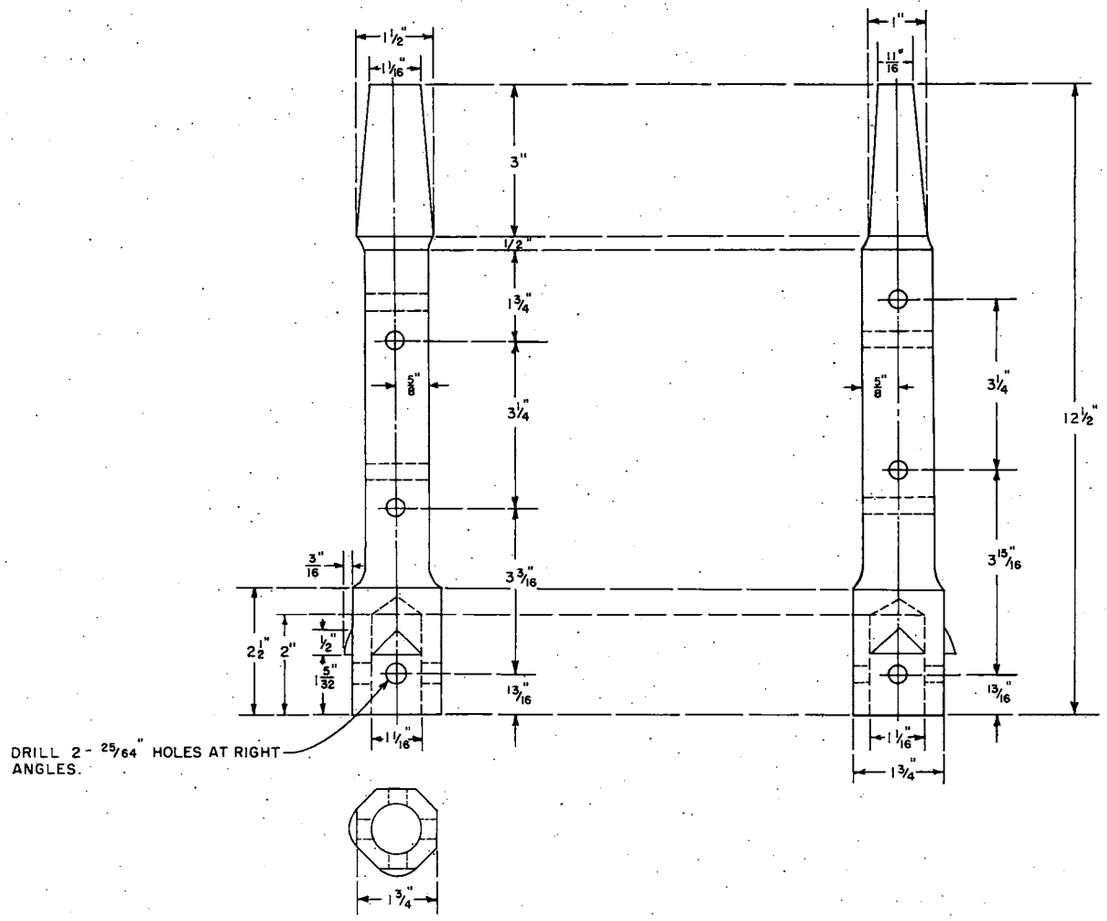
Approved — H. B. Simpson, Vice President, Operations

Dwg. Nº C-2160.1 Sheet 1

THIS PLAN SUPERSEDES PLAN NO. C-2160.0

NOTE:
FURNISH 4 BOLTS 5/16" x 2 1/2" SAE HEX.HD. BOLT WITH 2-BEV. RD.WASHER, SPG.WASHER W.I. WASHER & HEX.NUT.





DRILL 2 - 25/64" HOLES AT RIGHT ANGLES.

NOTE:
TARGET STAFF Nº 2 TO BE USED WITH PETTIBONE MULLIKEN HUB SWITCH STANDS.

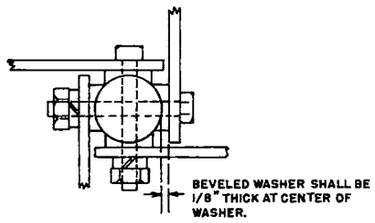
BURLINGTON NORTHERN INC.
STANDARD PLAN

SWITCH STAND TARGET STAFF Nº 2

ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1973

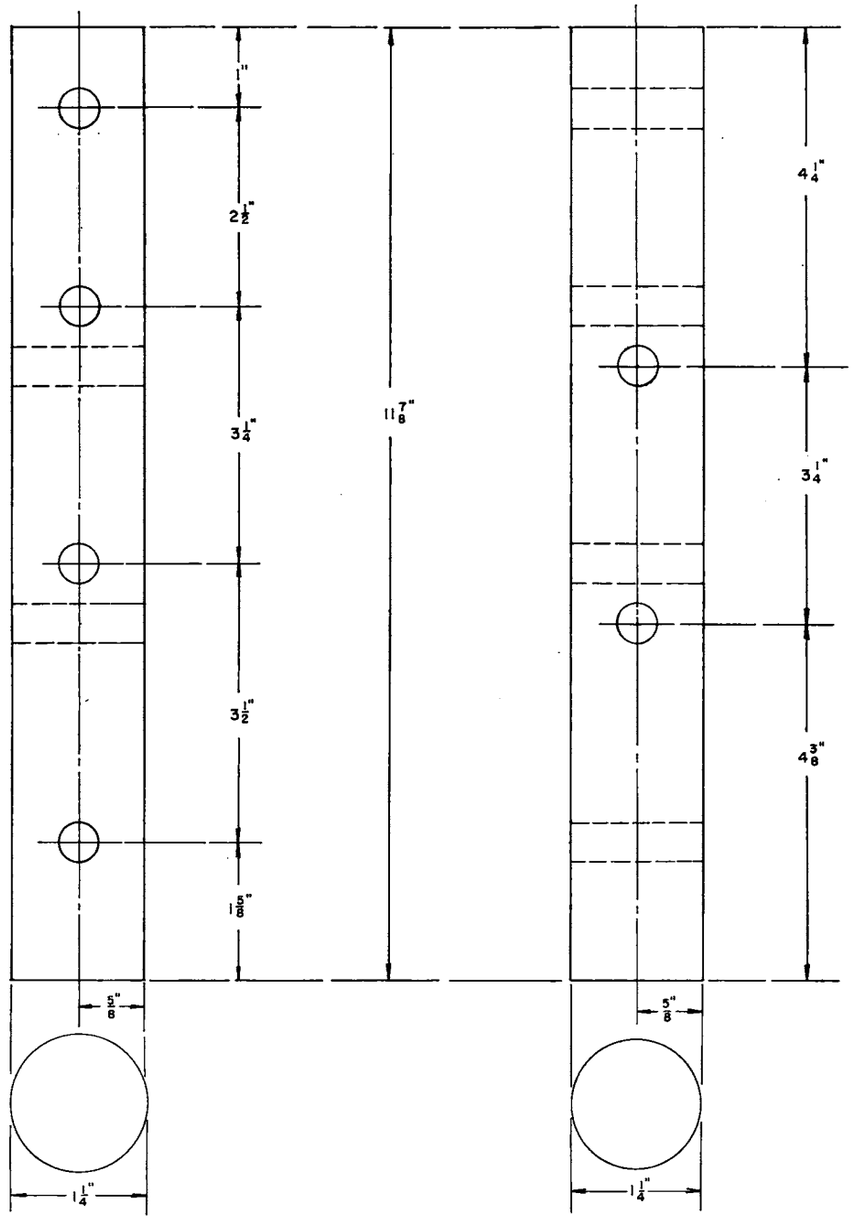
Dwg. NºC-2160.0 Sheet 2

ASSEMBLY



NOTE:

FASTEN TARGETS TO SWITCH STAND STAFF USING GALVANIZED OR CADMIUM PLATED 3/8" x 2 1/4" MACHINE BOLTS, NUTS, BEVELED WASHERS AND LOCK WASHERS.



NOTE:

DRILL ALL HOLES TO FIT 3/8" Ø BOLTS. USE B.N INC. TARGET Nº 1 STANDARD PLAN Nº C-2159.0 WITH STAFF Nº 2.

TARGET STAFF Nº 3 TO BE USED WITH THE FOLLOWING SWITCH STANDS NEW CENTURY MODEL 51 A

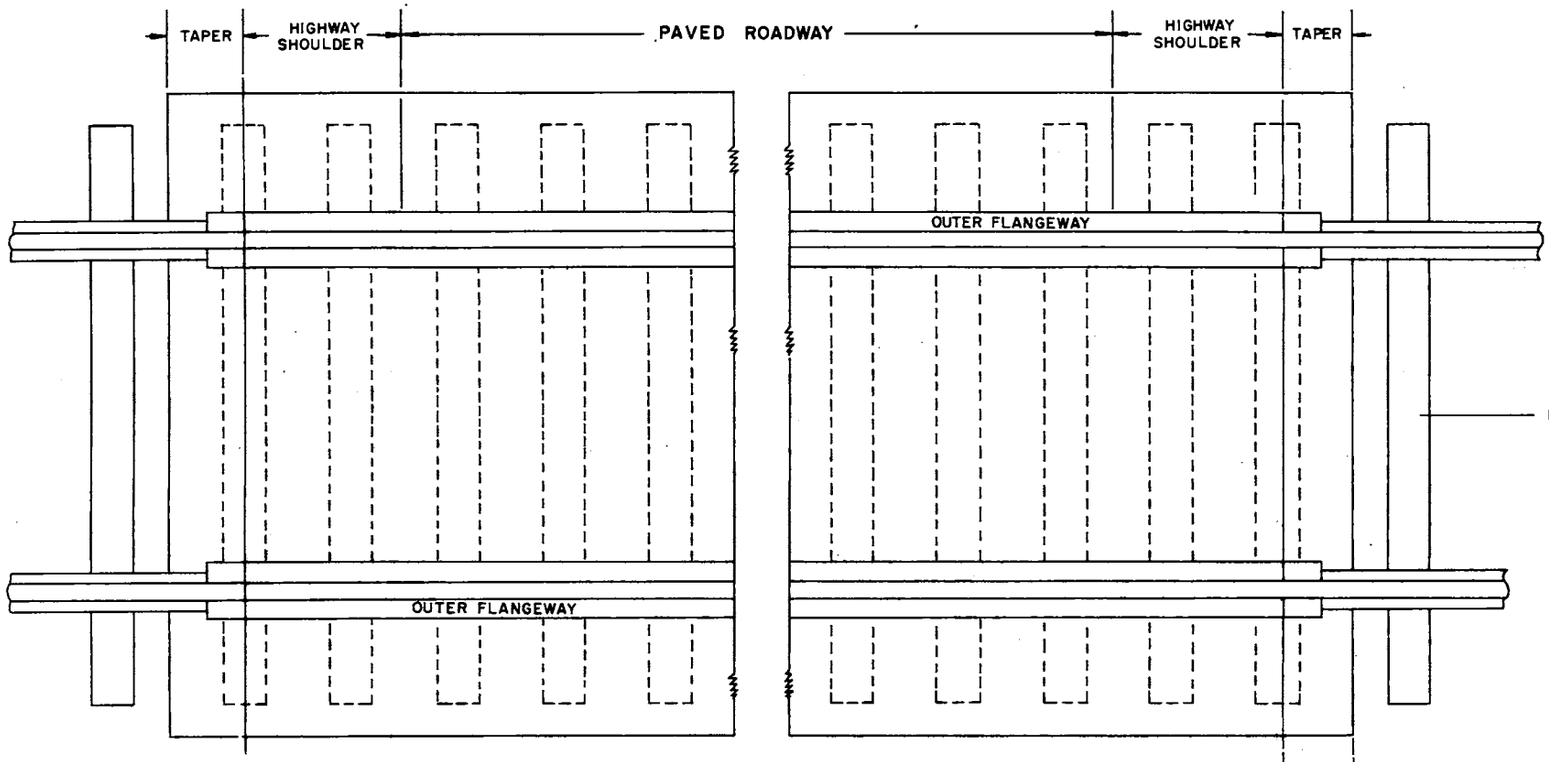
BURLINGTON NORTHERN INC.
STANDARD PLAN

SWITCH STAND TARGET STAFF Nº 3

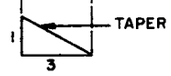
ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1973

Dwg. Nº C-2160.0

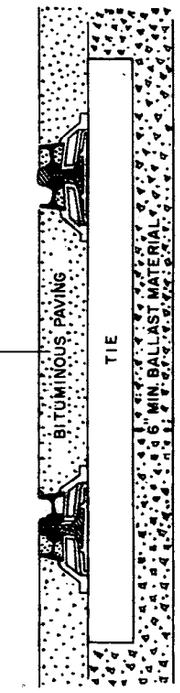
Sheet 3



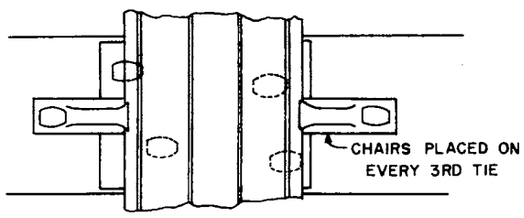
PLAN



END VIEW



SECTION



TOP VIEW

NOTE:

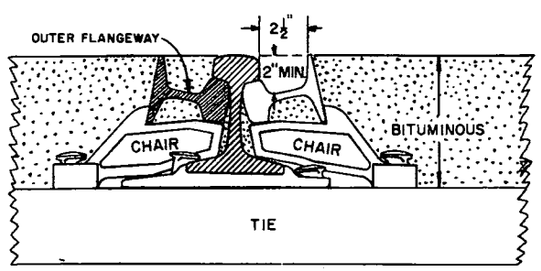
RAIL CHAIRS FOR USE WITH 13" OR 14" TIE PLATES
FOR 132 LB. RAIL SECTION USE CHAIR G.N. PATTERN Nº R 5278
" 115 LB. " " " " " " " R 5279
USE SCRAP 60 OR 68 LB. RAIL FOR FLANGEWAY RAIL.

RAIL CHAIRS FOR USE WITH 12" OR SMALLER TIE PLATES
FOR 115 LB. RAIL SECTION USE CHAIR G.N. PATTERN Nº R 5267
" 112 " " " " " " " " R 5267
" 110 " " " " " " " " R 5267
" 90 " " " " " " " " R 5268
USE SCRAP 56 OR 60 LB. RAIL FOR FLANGEWAY RAIL.

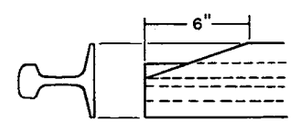
OUTER FLANGEWAY RAIL TO BE USED IN HIGH DENSITY MAINLINE AND HEAVY DUTY YARD TRACKS ONLY

NOTE:

AT MULTIPLE TRACK CROSSINGS TRACKS SHALL BE BROUGHT TO COMMON GRADE OR LEVEL TO TO PROVIDE A SMOOTH CROSSING. ALL BOLT HOLES AND JOINTS IN FLANGEWAY RAILS TO BE SEALED BY WELDING TO PREVENT SEEPAGE TO ROADBED. PAINT ALL SURFACES OF FLANGEWAY RAILS WHICH WILL COME IN CONTACT WITH PAVING MATERIAL WITH EMULSIFIED ASPHALT AND APPLY APPROX. 1/4 GAL EMULSIFIED ASPHALT PER SQUARE YARD TO TOP OF TIES AND BALLAST.



SECTION THROUGH FLANGEWAY



BEVEL FLANGEWAY RAIL

BURLINGTON NORTHERN INC.
STANDARD PLAN

PAVED CROSSING

ENGINEERING DIVISION, ST. PAUL, MINN NOV. 1973

Recommended

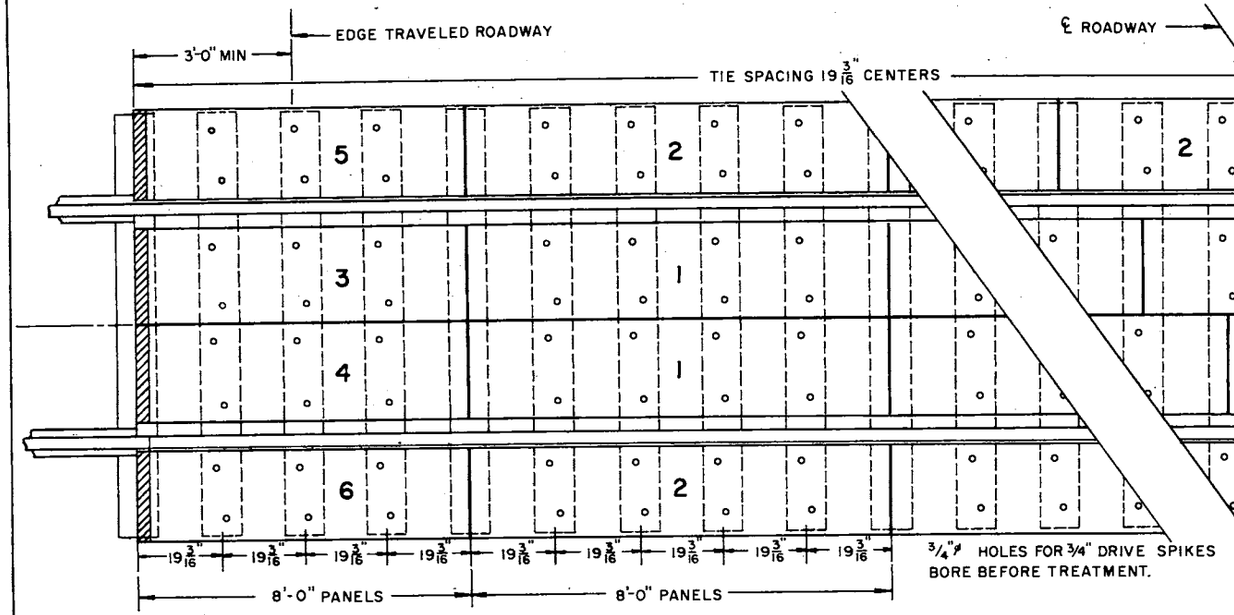
Asst. Vice President Engineering

Approved

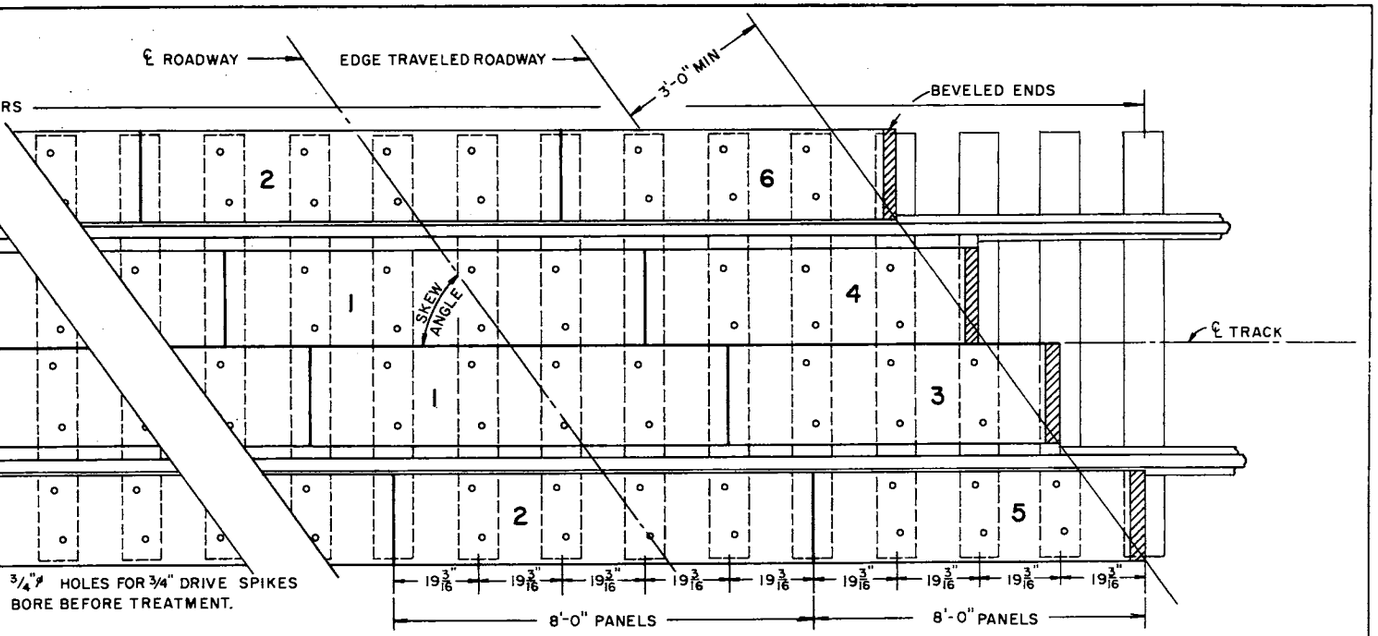
Vice President, Operations

Dwg. Nº C-2251.1

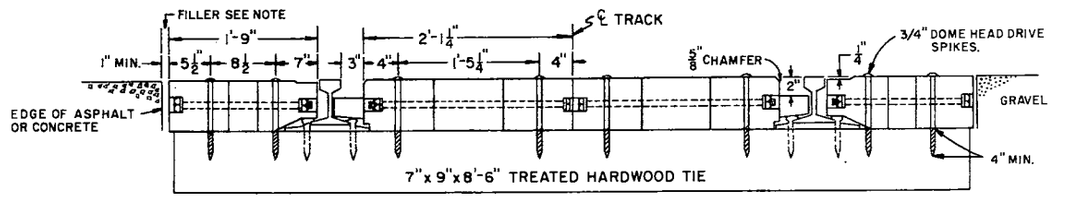
THIS PLAN SUPERSEDES PLAN NO. C-2251.0



PLAN OF RIGHT ANGLE CROSSING



PLAN OF SKEWED CROSSING



GENERAL NOTES

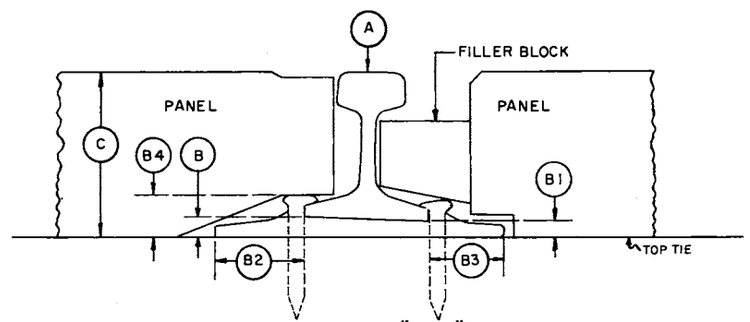
THIS PLAN SHALL BE USED ONLY FOR CONSTRUCTING PREFABRICATED TREATED TIMBER CROSSINGS FOR NEW OR REHABILITATED CROSSINGS AT LOCATIONS RECOMMENDED BY DIVISION SUPERINTENDENT AND MANAGER OF ENGINEERING.
FOR EACH APPROVED INSTALLATION DIVISION ENGINEER SHALL FURNISH A SKETCH SHOWING WIDTH OF ROADWAY, SKEW ANGLE, TRACK ALIGNMENT AND DIMENSION A, B, B1, B2, B3, B4 AND C AS SHOWN ON SECTION A-A.

INSTALLATION

BALLAST THROUGH CROSSING AREA SHALL BE CLEAN CRUSHED ROCK BALLAST TO AT LEAST 12" BELOW BOTTOM OF TIES. TOP OF BALLAST TO BE 2" BELOW TOP OF TIES UNDER CROSSING PANELS.
TIES THROUGH CROSSING SHALL BE Nº 5 TREATED HARDWOOD IN GOOD CONDITION ALL TIES THROUGH CROSSING SHALL BE ACCURATELY SPACED AT 19 3/16" CENTERS. ENDS OF CROSSING PANELS MUST BE AT CENTER OF TIE.
RAIL JOINTS SHOULD BE LOCATED TO FALL OUTSIDE THE CROSSING. WHEREVER POSSIBLE WELDED CROSSING RAILS SHOULD BE RELAYED THROUGH CROSSING BEFORE NEW TIES AND CROSSING PANELS ARE INSTALLED.
HOLES IN TIES FOR DRIVE SPIKES SHALL BE 11/16" DIAMETER AND SHALL BE LOCATED AND BORED IN FIELD. DRIVE SPIKES SHALL BE DRIVEN NOT TURNED INTO PREBORED HOLES IN TIES.
TREATED TIMBER SHALL BE HANDLED CAREFULLY TO AVOID EXPOSING ANY PART OF THE UNTREATED INTERIOR WOOD.
HOLES AND/OR CUTS MADE IN THE FIELD IN TREATED TIMBER SHALL BE SWABBED WITH HOT CREOSOTE.

MATERIAL & FABRICATION

MATERIALS AND FABRICATION SHALL CONFORM TO A.R.E.A. MANUAL, CHAPTER 9 SPECIFICATIONS FOR THE CONSTRUCTION OF PREFABRICATED SECTIONAL TREATED TIMBER CROSSINGS, SECTIONS 3, 5 AND 6.
ALL TIMBER SHALL BE TREATED WITH PRESERVATIVE IN ACCORDANCE WITH B.N. INC. SPECIFICATIONS. SCREW DRIVE SPIKES SHALL BE 3/4" DIAMETER "LEWIS SEALTITE DOME HEAD DRIVE SPIKES OR EQUAL.
FILLER SHALL BE PREFORMED EXPANSION JOINT AND CONFORM TO AASHO-M33 FOR ROADS PAVED WITH CONCRETE OR ASPHALT.



SECTION "A-A"

A - WEIGHT AND SECTION OF RAIL
B - TIE PLATE THICKNESS ON FIELD SIDE
B1 - TIE PLATE THICKNESS ON GAGE SIDE
B2 - OUTSIDE PROJECTION
B3 - INSIDE PROJECTION
B4 - HEIGHT OF DAP TO CLEAR SPIKE ON FIELD SIDE
C - TOP OF RAIL TO TOP OF TIE

BURLINGTON NORTHERN INC.
STANDARD PLAN

TIMBER PANELS
FOR
IMPORTANT ROAD CROSSINGS

ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1971

Recommended
Asst. Vice President Engineering

Approved
Vice President, Operations

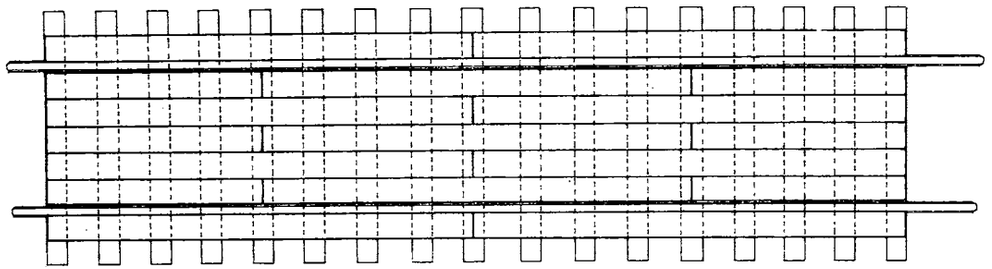
Dwg. Nº C-2252.3

Revised 10-73, 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-2252.2

NOTE:
HARDWOOD PLANKS TO BE HICKORY, RED OR WHITE OAK, NO OVERCUP, SWAMPWHITE, PIN OR WATER RED OAK ACCEPTED. MATERIAL TO BE FREE OF WANE, 4"x10"x16'-0", ROUGH, SQUARE EDGE, PLUS OR MINUS 1/8" VARIANCE ALLOWED IN THICKNESS OR WIDTH AND TRIMMED TO LENGTH. LATEST N.H.L.A. RULE FOR BRIDGE AND CROSSING PLANK APPLIES.
SOFTWOOD PLANKS TO BE DOUGLAS FIR, 4"x10"x16'-0", 1500 F.B. ROUGH PER WCLB RULE 16, PARAGRAPH 123B, 710B-711, SQUARE EDGE AND TRIMMED TO LENGTH. ALL PLANKS ARE UNTREATED. B.N. INC. CODE NO.: HARDWOOD PLANK CODE NO. 04-188-10000, SOFTWOOD PLANK CODE NO. 04-105-5150X

32' LAYOUT

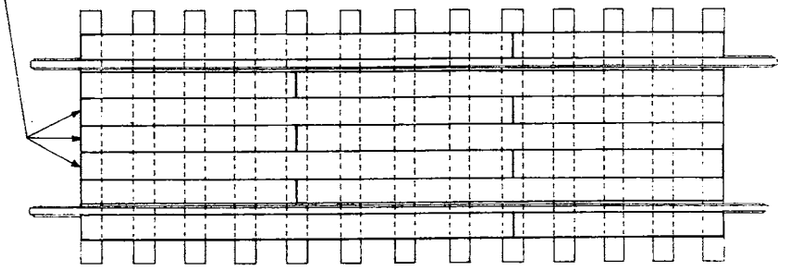
STAGGER PLANKS AS SHOWN



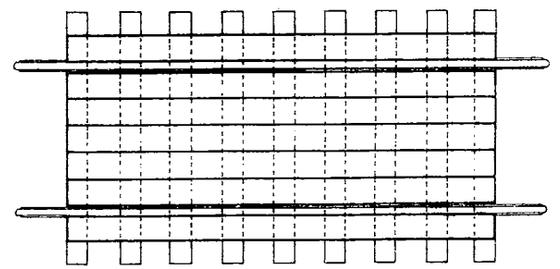
NOTE:
AT UNIMPORTANT PRIVATE CROSSING WHERE CONDITIONS WARRANT, THE 3 CENTER PLANKS MAY BE OMITTED, AND THE SPACE FILLED TO TRACK LEVEL WITH BALLAST MATERIAL.

24' LAYOUT

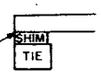
STAGGER PLANKS AS SHOWN



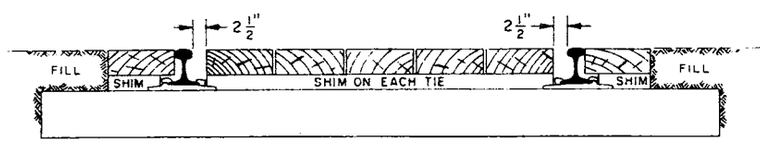
16' LAYOUT



NOTE:
HOLES IN TIES FOR DRIVE SPIKES SHALL BE 11/16" DIAMETER AND SHALL BE LOCATED AND BORED IN FIELD.
SPIKE PLANKS ON EVERY OTHER TIE USING ONE OF THE FOLLOWING LEWIS SEALTITE DOMEHEAD DRIVE SPIKES OR EQUAL.
10" x 3/4" DRIVE SPIKE TO BE USED WITH 85 LB. RAIL AND LIGHTER.
12" x 3/4" DRIVE SPIKE TO BE USED WITH 90 LB. THRU 119 LB. & 130 LB. Penn. Section.
13" x 3/4" DRIVE SPIKE TO BE USED WITH 129 LB. AND HEAVIER.



NOTE:
ENDS SHALL NOT PROJECT BEYOND SHIMS OR EDGE OF TIE.



SECTION

NOTE:
SHIMS TO BE FIR, PINE OR HEMLOCK WCLB RULE 16 PARAGRAPH 118B, OR EQUAL GRADE. FIELD CUT FROM
1"x8" or 9"x7' B.N. INC. CODE NO 04-097-24004
2"x8" or 9"x7' B.N. INC. CODE NO. 04-097-35002

WIDTH OF PUBLIC CROSSINGS

PUBLIC CROSSING SHALL BE OF SUCH WIDTH AS PRESCRIBED BY LAW. BUT IN NO CASE SHALL THE WIDTH BE LESS THAN THAT OF THE GRADED ROADWAY APPROACH.

BURLINGTON NORTHERN INC.
STANDARD PLAN

PLANK CROSSING FOR PRIVATE ROADS AND UNIMPORTANT PUBLIC ROADS

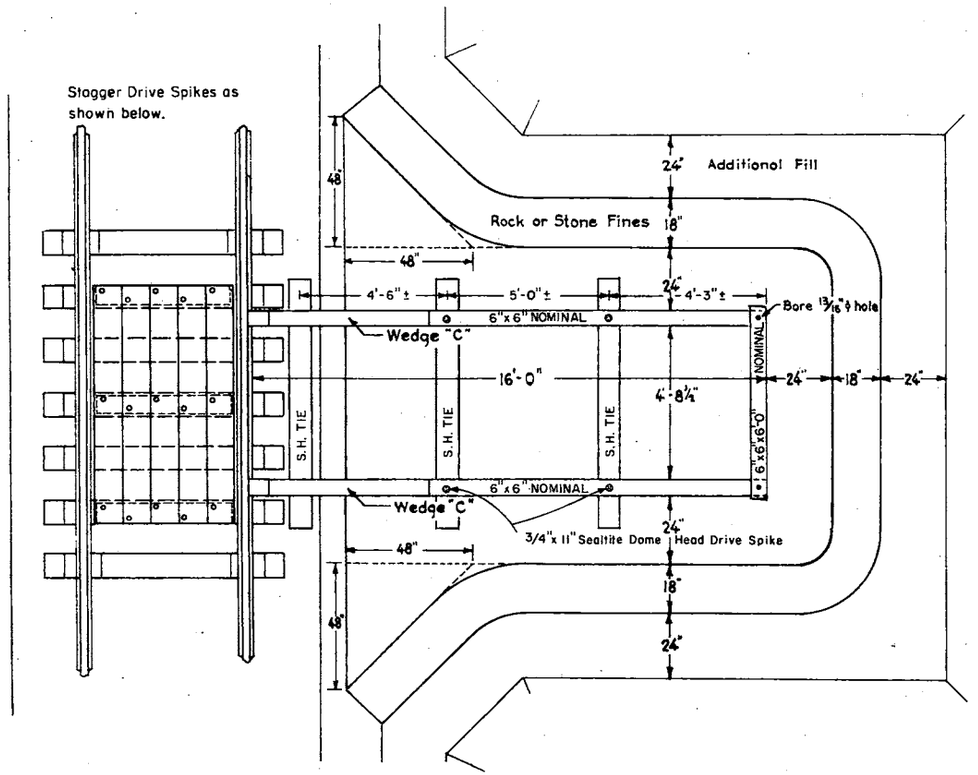
ENGINEERING DIVISION, ST. PAUL, MINN JULY, 1971

Recommended
B. H. Anderson
Asst Vice President Engineering

Approved
J. C. Livingston
Vice President, Operations

Revised 4-72, 6-79, 10-81
THIS PLAN SUPERSEDES PLAN Nº C-2253.2

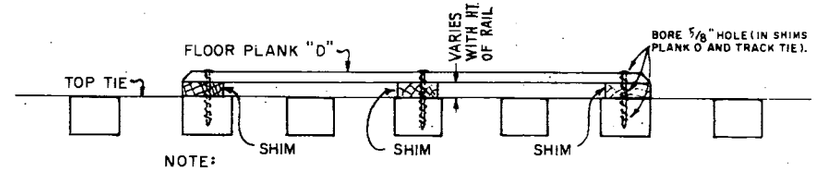
Dwg Nº C-2253.3



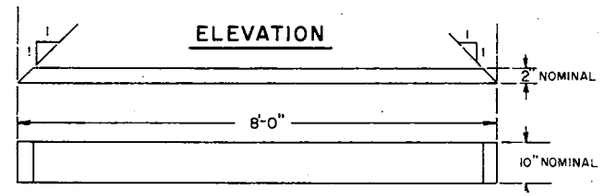
PLAN

NOTE:
ADJUST HEIGHT OF S.H. TIE FOR VARIOUS RAIL SECTIONS

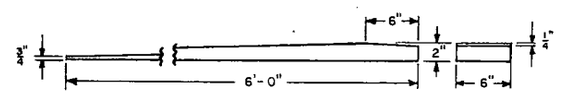
SECTION PARALLEL TO TRACK



NOTE:
SHIMS TO BE FIR, PINE OR HEMLOCK WCLB RULE 16 PARAGRAPH 118B OR EQUAL GRADE. FIELD CUT FROM
1"x 8" or 9" x 7' B.N. INC CODE NO. 04-097-24004
2"x 8" or 9" x 7' B.N. INC CODE NO. 04-097-35002

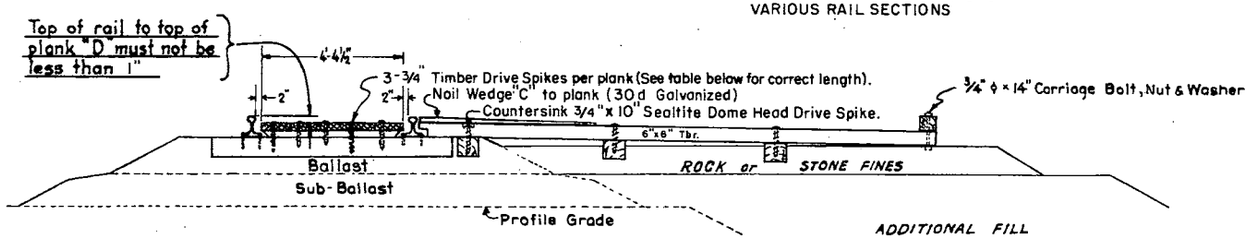


DETAILS OF FLOOR PLANKS "D"



ELEVATION END VIEW

DETAILS OF WEDGE "C"



SECTION THRU TRACK

WEIGHT OF RAIL	SHIMS REQUIRED	TBR. DR. SPIKES
75 LB. THRU 85 LB.	2"	10" Lg.
90 LB.	3"	12" Lg.
100 LB.	3"	"
110 LB THRU 119 LB. & 130 LB.	4"	"
129, 131, 132 & 136 LB.	5"	13" Lg

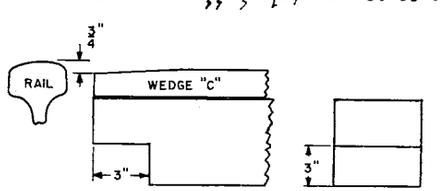
NOTE:
Treat Planks, Shims, Wedges and Timbers 50/50 Creosote Oil to 8 lbs retension except for the set offs to be used in the rainy climate of the Pacific Division.

All field cuts to be treated with creosote except as noted above.

All Shims, Planks and Timbers are nominal size.

Planks to be 2" x 10" x 8'-0" Nº 1 structural Fir, Gumwood, Red or White Oak per WCLA rule 16 paragraph 123B or NNL rule 1963 page 82.

~ NOTE ~
Do not place motor car set-off closer than 150' from dragging equipment detectors.



ELEVATION END VIEW

DETAILS OF 16' PLANK

BURLINGTON NORTHERN INC.
STANDARD PLAN

MOTOR CAR SET-OFF
75 LB. THRU 136 LB. RAIL

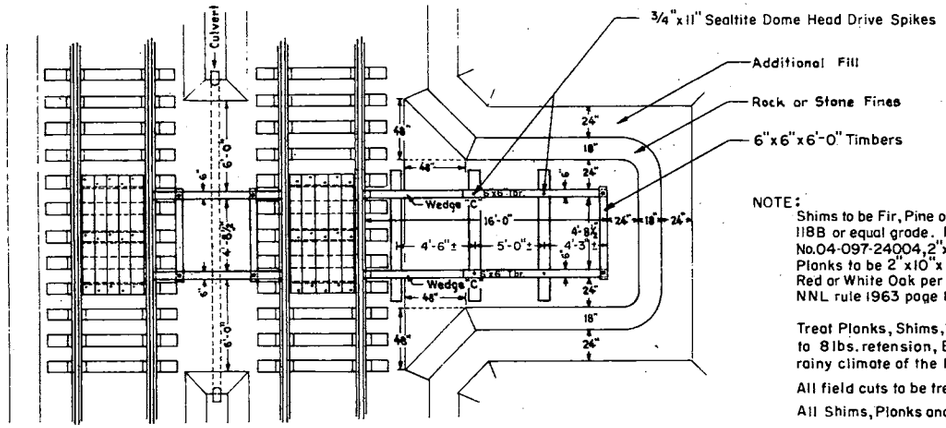
ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1971

Recommended
Asst. Vice President Engineering

Approved
Vice President, Operations

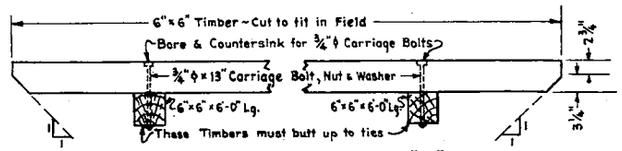
Dwg. Nº C-2254.5

Revised 8-72, 8-73, 5-75, 2-76, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-2254.4



Note: Stagger Drive Spikes as shown above

PLAN



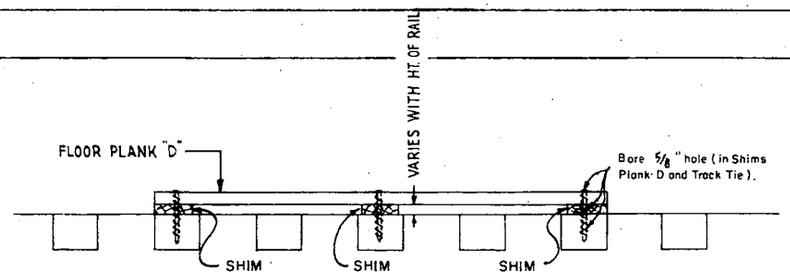
DETAIL OF TIMBERS "E"

NOTE:
Shims to be Fir, Pine or Hemlock WCLB rule 16 paragraph 118B or equal grade. Field cut from 1"x8" or 9"x7" BN. INC. Code No.04-097-24004, 2"x8" or 9"x7" B.N. INC. Code No.04-097-35002 Planks to be 2"x10"x 8'-0" Nº1 structural Fir, Gumwood Red or White Oak per WCLA rule 16 paragraph 123B or NNL rule 1963 page 82.

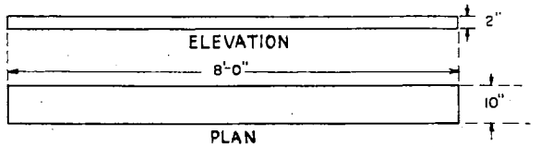
Treat Planks, Shims, Wedges and Timbers 50/50 Creosote Oil to 8 lbs. retension, Except for the set offs to be used in the rainy climate of the Pacific Division.

All field cuts to be treated with creosote except as noted above.

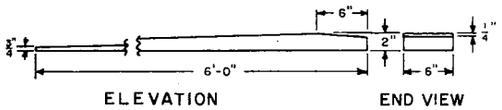
All Shims, Planks and Timbers are nominal size.



SECTION PARALLEL TO TRACK

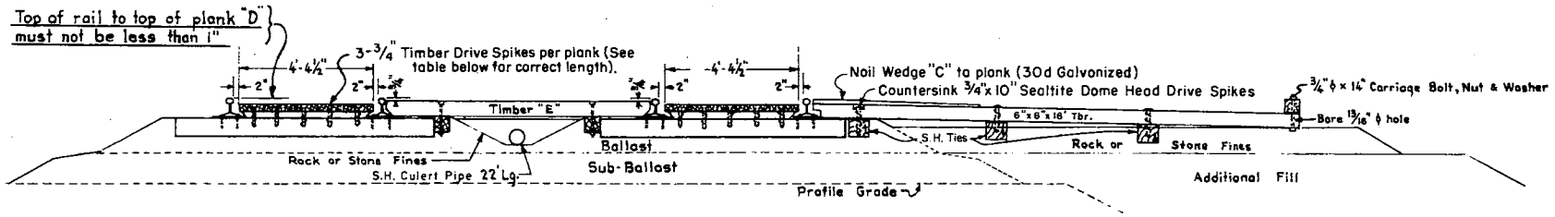


DETAIL OF FLOOR PLANKS "D"



DETAILS OF WEDGES "C"

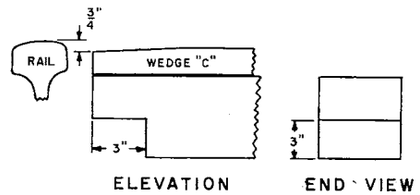
NOTE:
Do not place motor car set-off closer than 150' from dragging equipment detectors.



SECTION THRU TRACK

NOTE:
ADJUST HEIGHT OF S.H. TIES FOR VARIOUS RAIL SECTIONS.

WEIGHT OF RAIL	SHIMS REQUIRED	TBR. DR. SPIKES
75 LB. THRU 85 LB.	2"	10" Lg.
90 LB.	3"	12" Lg.
100 LB.	3"	"
110 LB. THRU 119 LB. & 130 LB.	4"	"
129, 131, 132 & 136 LB.	5"	13" Lg.



DETAILS OF 16' PLANK

BURLINGTON NORTHERN INC.
STANDARD PLAN

MOTOR CAR SET-OFF DOUBLE TRACK 75 LB. THRU 136 LB. RAIL

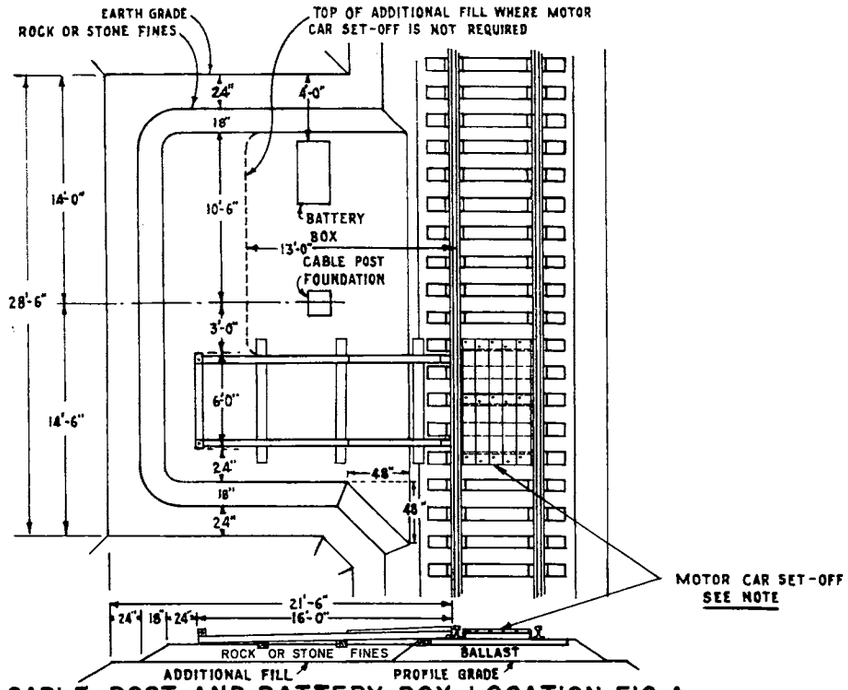
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1972

Recommended: Asst. Vice President Engineering

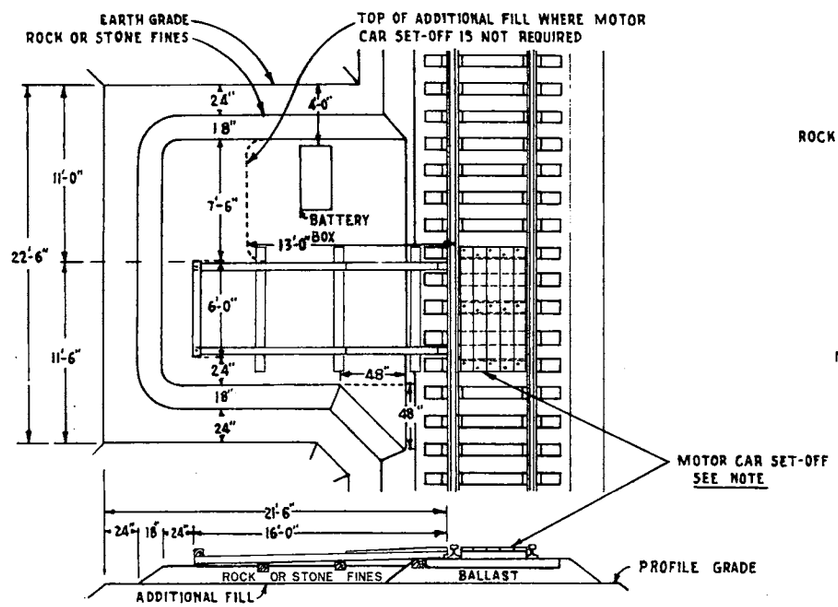
Approved: Vice President, Operations

Dwg. Nº C-2255.4

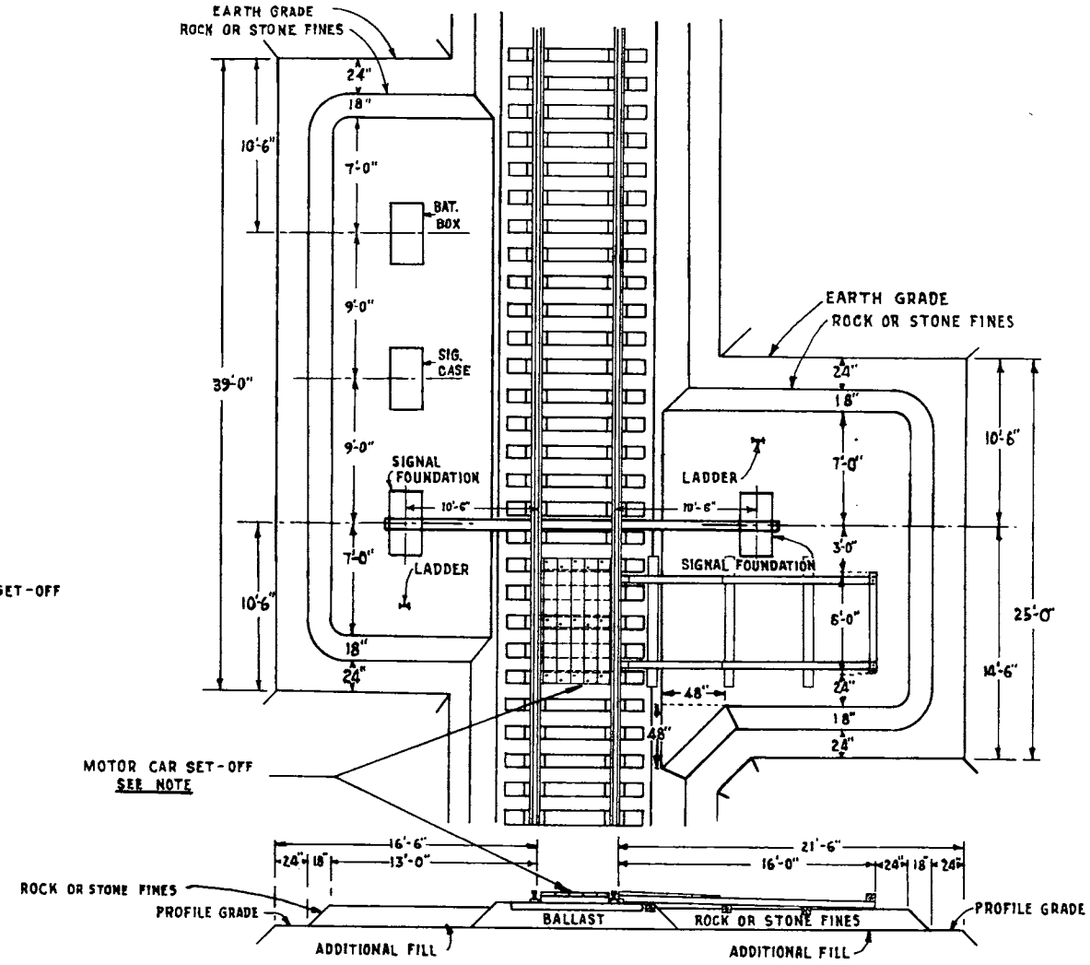
Revised 8-73, 5-75, 2-76, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-2255.3



CABLE POST AND BATTERY BOX LOCATION FIG.A



BATTERY BOX LOCATION FIG.B



DOUBLE SIGNAL LOCATION FIG.C

NOTE:

DRAGGING EQUIPMENT DETECTORS ARE NOT TO BE PLACED CLOSER THAN 150 FEET FROM MOTOR CAR SET-OFF.

FOR MOTOR CAR SET-OFF FRAMING DETAILS SEE B.N. INC. STANDARD PLANS C-2254.0 AND C-2255.0

BURLINGTON NORTHERN INC.
STANDARD PLAN

SIGNAL BERMS AND MOTOR CAR SET-OFFS

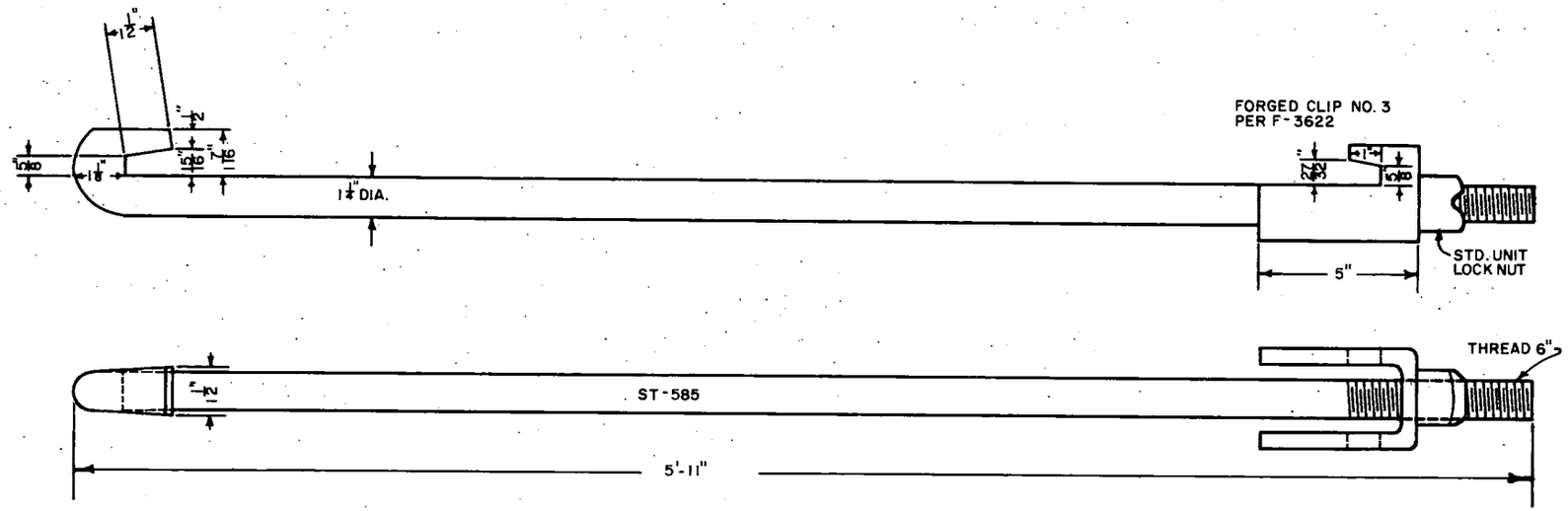
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1972

Recommended: B.G. Anderson, Asst. Vice President Engineering

Approved: J.C. Thington, Vice President, Operations

Revised 2-76, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-2256.1

Dwg. Nº C-2256.2



PER RACOR PLAN NO. 3882-C DATED 1-2-45.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NON INSULATED GAGE ROD

ENGINEERING DIVISION, ST. PAUL, MINN. May 18, 1970.

Recommended

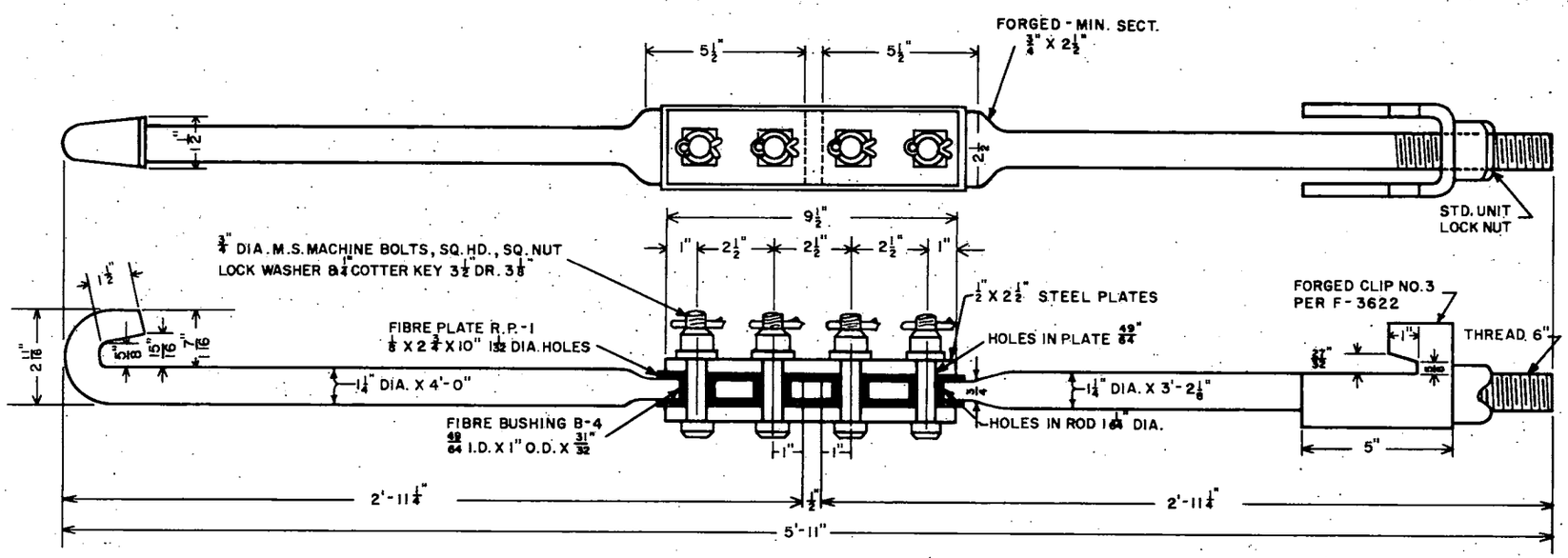
F. A. Kempe
Director Track Engineering

B. H. Anderson
Asst. Vice President Engineering

Approved

R. M. Lountzer
Vice President, Operations

Dwg. No C-2500.0



PER RACOR PLAN NO. 3882-D DATED 11-29-45

BURLINGTON NORTHERN INC.
STANDARD PLAN

INSULATED GAGE ROD
(ADJUSTABLE)

ENGINEERING DIVISION, ST. PAUL, MINN. May 18, 1970

Recommended

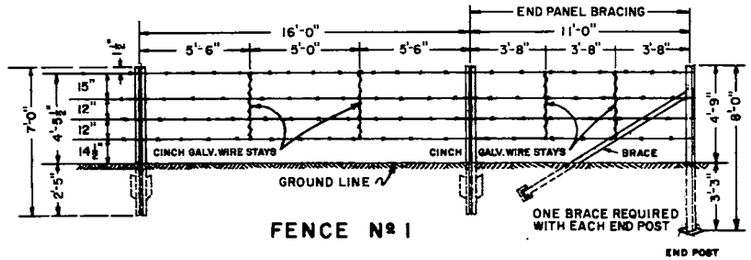
F. A. Kempe
Director Track Engineering

Approved

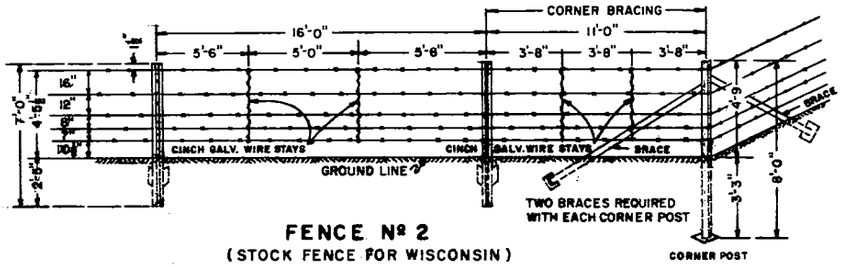
R. M. Lomskopp
Vice President, Operations

R. H. Anderson
Asst. Vice President Engineering

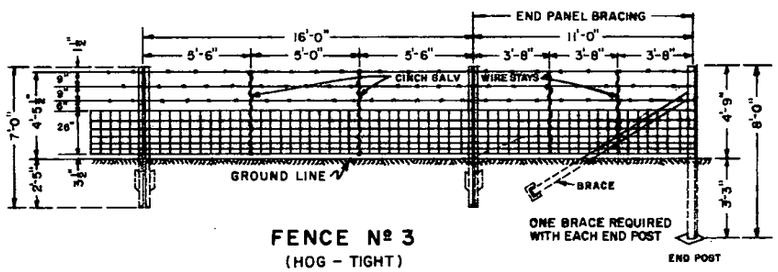
Dwg. Nº C-2501.0



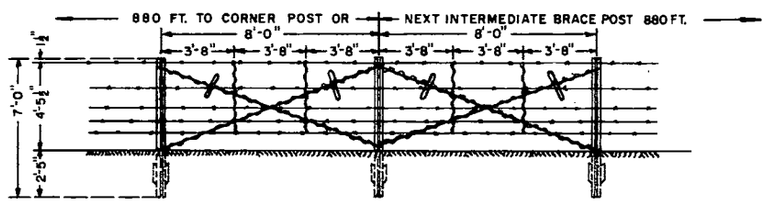
FENCE Nº 1



FENCE Nº 2
(STOCK FENCE FOR WISCONSIN)



FENCE Nº 3
(HOG - TIGHT)



BRACING EVERY 880 FEET

BRACING TO BE NO.9 GALVANIZED STEEL WIRE RUN DIAGONALLY AS SHOWN IN D AGRAM. BRACE WIRES TO BE FASTENED 3" OR MORE FROM GROUND LINE AND 3" OR MORE FROM TOP OF POST WITH NO LESS THAN 2 TURNS ABOUT LINE POSTS. TWIST BRACE WIRES TIGHT WITH A STICK OR ROD UNTIL THE WHOLE ASSEMBLY IS RIGID LEAVE ONE END OF THE STICK LONG ENOUGH TO ANCHOR BEHIND HORIZONTAL WIRES TO PREVENT UNWINDING.

BILL OF MATERIAL FOR ONE MILE OF FENCE

(FENCE Nº 1)

336 T-TYPE STUDDED LINE POSTS WITH ANCHORS FURNISH 4 WIRE CLAMPS PER POST.
21,120-FEET Nº 12½ GAGE GALVANIZED BARBED WIRE.
672-CINCH GALVANIZED WIRE STAYS 3'-6" LONG.

(FENCE Nº 2)

336 -T-TYPE STUDDED LINE POSTS WITH ANCHORS FURNISH 5 WIRE CLAMPS PER POST.
26,400-FEET Nº 12½ GAGE GALVANIZED BARBED WIRE.
672-CINCH GALVANIZED WIRE STAYS 4'-0" LONG.

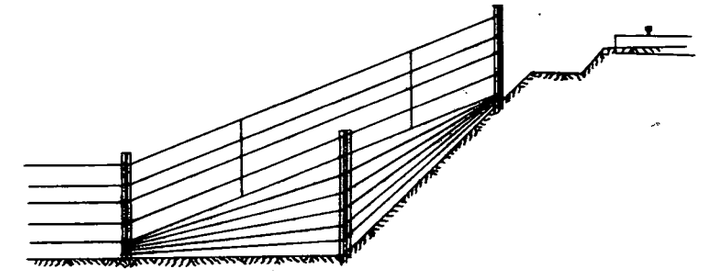
(FENCE Nº 3)

336-T-TYPE STUDDED LINE POSTS WITH ANCHORS FURNISH 6 WIRE CLAMPS PER POST.
15,840 FEET Nº 12½ GAGE GALVANIZED BARBED WIRE.
5,280 FEET GALV. STEEL 7-LINE HOG TIGHT WIRE FENCE 26" HIGH. 6" SPACING BETWEEN STAY WIRES. Nº 9 GAGE GALV. STEEL TOP AND BOTTOM WIRES AND Nº 11 GAGE STAY AND LINE WIRES.
672 - CINCH GALVANIZED WIRE STAYS 4'-0" LONG.

NOTE:
DEDUCT ONE LINE POST FOR EACH CORNER POST USED.

(BRACING)

APPROXIMATELY 450FT. Nº 9 GAGE GALV. STEEL WIRE.



WING FENCE ON EMBANKMENT

NOTE:
LINE POSTS SHALL BE MADE TO A.R.E.A. SPECIFICATIONS AND SHALL HAVE A NOMINAL WEIGHT OF 1.33 LBS PER FOOT.

BURLINGTON NORTHERN INC.
STANDARD PLAN

RIGHT OF WAY FENCES

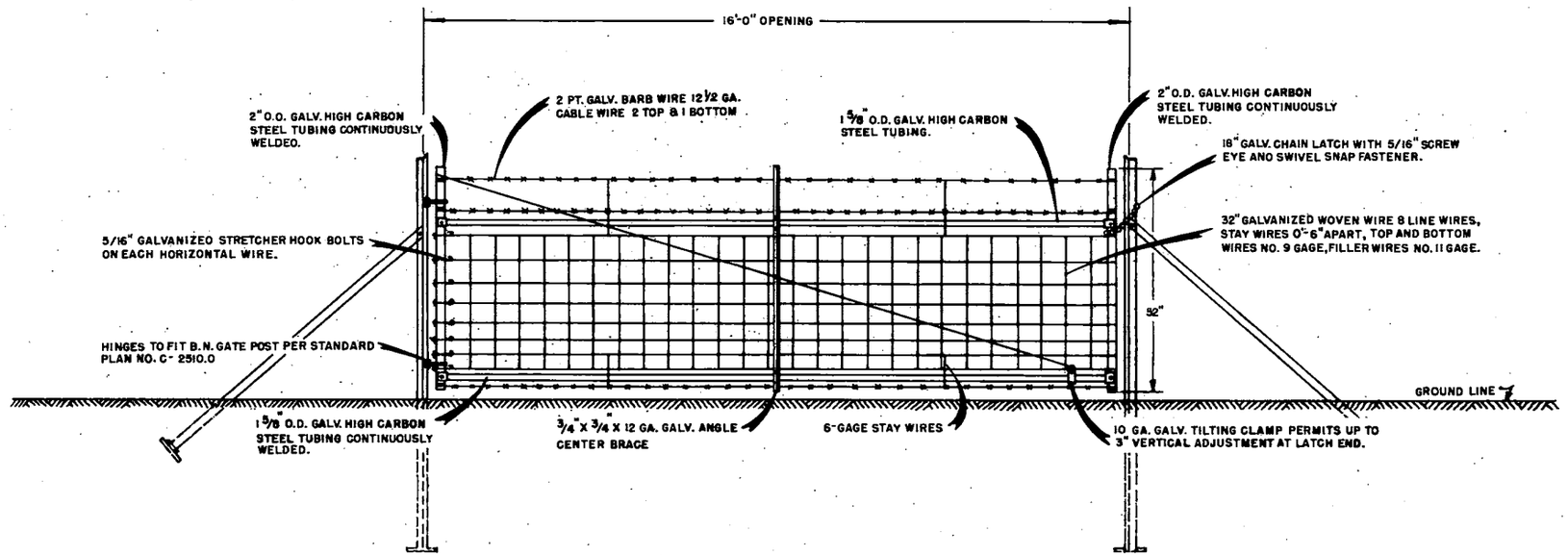
ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1971

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. Nº C-2504.3

Revised 12-73, 5-75, 7-78
THIS PLAN SUPERSEDES PLAN NO. C-2504.2



FARM GATE TO BE MADE PER B.N. STANDARD PLAN C-2505.1 OR APPROVED ALTERNATE CONSTRUCTION

APPROVED ALTERNATE

FARMASTERS GALVANIZED DELUXE WIRE GATE STOCK NUMBER DW. 16 MIN. WEIGHT 100 LBS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

FARM GATE & POSTS

ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1972

Recommended: B. H. Gunderson — Asst. Vice President Engineering

Approved: [illegible] — Vice President, Operations

Revised 1-74, 7-79
THIS PLAN SUPERSEDES PLAN NO. C-2505.1

Dwg. № C-2505.2

METHOD OF MARKING CLEARANCE POINTS FOR CASE 1 AND 2

FIG. 3 WHERE THERE ARE NO INSULATED JOINTS OR DERAILS
MARKING IS TO BE DONE AT THE CLEARANCE POINT. TOP OF TIE FROM END TO RAIL ALSO OUTSIDE BASE & WEB OF RAIL TO BE PAINTED ORANGE.

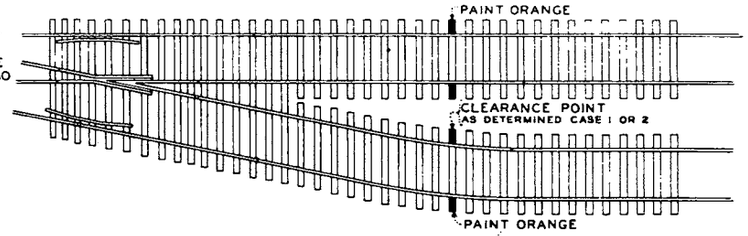


FIG. 4 WHERE THERE ARE INSULATED JOINTS DO NOT PAINT AT CLEARANCE POINT. PAINTING SHOULD BE DONE AT THE INSULATED JOINT WHICH MUST BE AT LEAST 3 FEET FURTHER FROM THE SWITCH. THERE MUST BE NO INSULATED JOINT IN THE OTHER RAIL CLOSER TO THE SWITCH THAN THE PAINTED INSULATED JOINT.
IF AN INSULATED JOINT IS FOUND CLOSER TO THE SWITCH THAN THE MARKED JOINT IT MUST BE MOVED TO A POSITION FURTHER FROM THE SWITCH THAN THE MARKED JOINT.
TOP OF TIE FROM END TO RAIL ALSO INSULATED JOINT TO BE PAINTED ORANGE.

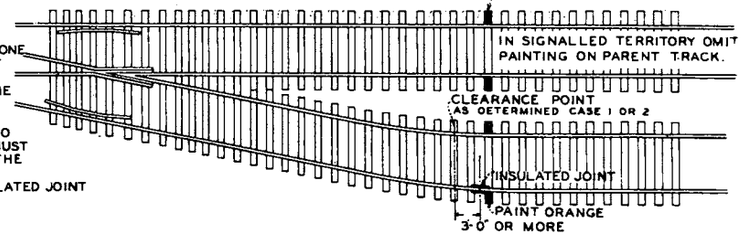
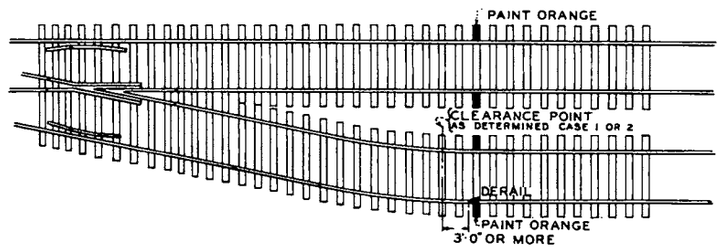


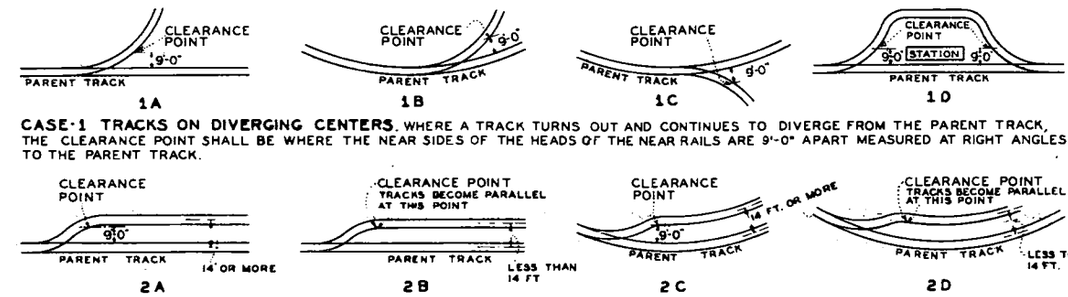
FIG. 5 WHERE THERE IS A DERAIL
DO NOT PAINT AT CLEARANCE POINT. PAINTING SHOULD BE DONE AT THE DERAIL WHICH MUST BE AT LEAST 3 FEET FURTHER FROM THE SWITCH,
TOP OF TIE FROM END TO BASE OF RAIL AND DERAIL TO BE PAINTED ORANGE.



NOTE
1. WHERE MOVEMENT ONTO PARENT TRACK IS GOVERNED BY SIGNAL, CLEARANCE POINT IS NOT TO BE PAINTED.
2. FOULING POINT SIGNS PER B.N. STANDARD PLAN Nº C-3031.1 MAY BE INSTALLED AT LOCATIONS AUTHORIZED BY THE REGIONAL A.V.P.O.

(PAINT COLOR SHALL BE OMAHA ORANGE)

INSTRUCTIONS FOR MARKING CLEARANCE POINTS FOR SIDE AND SECONDARY TRACKS



CASE-1 TRACKS ON DIVERGING CENTERS. WHERE A TRACK TURNS OUT AND CONTINUES TO DIVERGE FROM THE PARENT TRACK, THE CLEARANCE POINT SHALL BE WHERE THE NEAR SIDES OF THE HEADS OF THE NEAR RAILS ARE 9'-0" APART MEASURED AT RIGHT ANGLES TO THE PARENT TRACK.

CASE-2, TRACKS PARALLEL-TANGENT OR CURVED. (A) WHERE A TRACK TURNS OUT AND BECOMES PARALLEL TO THE PARENT TRACK THE CLEARANCE POINT SHALL BE WHERE THE NEAR SIDES OF THE HEADS OF THE NEAR RAILS ARE 9'-0" APART MEASURED AT RIGHT ANGLES TO THE PARENT TRACK. SEE SKETCHES 2A AND 2C.
(B) WHEN PARALLEL TRACKS ARE SO CLOSE THAT THERE IS NOT 9 FEET BETWEEN THE NEAR SIDES OF THE HEADS OF THE NEAR RAILS THEN THE CLEARANCE POINT SHALL BE AT THE PLACE WHERE THE NEAR RAILS BECOME PARALLEL. SEE SKETCHES 2B AND 2D.

BURLINGTON NORTHERN INC
STANDARD PLAN

TRACK CLEARANCE POINTS

ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1973

Recommended — Asst. Vice President Engineering

Approved — Vice President Operations

Dwg Nº C-2508.0

			TRACK CENTERS								VERTICAL						HORIZONTAL																			
																							PLATFORMS						SIGNALS							
	REGULATION REFERENCE		MAIN TRACKS	ANY TWO SUBSIDIARY TRACKS	ADJACENT SUBSIDIARY TRACK TO ANY MAIN TRACKS	LADDER TRACK ADJACENT TO ANY PARALLEL TRACK	TWO ADJACENT PARALLEL LADDER TRACKS	LEAD, REPAIR AND CABOOSE TRACKS	TEAM TRACKS IN PAIRS	UNLOADING TRACKS AT PLATFORMS	GENERAL	THRU BRIDGES	HIGHWAY BRIDGES	TUNNELS	BUILDING DOORS	IN BUILDINGS	GENERAL	THRU BRIDGES	HIGHWAY BRIDGES	TUNNELS	BUILDING DOORS	IN BUILDINGS	A	B	C	D	E	F	HIGH	LOW, BETWEEN TRACKS HEIGHT	LOW, BETWEEN TRACKS CLEARANCE	SWITCH BOXES, ETC. HEIGHT	SWITCH BOXES, ETC. CLEARANCE	POLES	MAIL CRANES	ICING DOORS	ORE AND COAL DOCKS	CATTLE CHUTES
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
CALIFORNIA	G.O. 26-D	1964	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0	18-0 [3]	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8			4-0	7-6 [8]	8-6	3-0	6-0	0-4	3-0	8-6	6-5 [9]	7-8	8-6	8-6
CANADA	G.O. E-2	1965	13-0	13-6	14-0	15-0	18-0	13-6	12-0	12-0	22-6	22-6	22-6	22-6	22-6	22-6	8-4¼	8-0	8-4¼	8-0	8-4¼	8-4¼	[12]	[12]	[12]	[12]	4-0	[12]	8-4¼		8-4¼			8-4¼	7-1¾ [9]	8-4¼	8-4¼	8-4¼
COLORADO	DEC. 55621	1961	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	22-6	23-0	17-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	7-0	8-0 [5]	0-8	5-0	4-0	5-9 [6]	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	6-8 [10]	8-6	8-6
IDAHO	G.O. 99	1955	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	8-6 [2]	8-6 [2]	0-8	4-8	4-0	7-3	4-0	8-6 [8]	8-0	3-0	6-0	0-4	3-0	8-6	8-6	6-8 [10]	8-6	8-6
ILLINOIS	G.O. 22	1969	13-6 [11]	13-6 [11]	15-0	17-0 [15]	19-0 [16]		13-6	13-6	21-6	21-3	21-6	21-6 [1]	H		8-0	8-0	8-0	8-0 [1]	7-0 [2]	8-0	0-4	4-6	0-8	5-1 [7]	CFH	6-2	8-6	2-8				9-0	8-0	8-0	8-0	8-0
IOWA	DOCK K-1281	1957	14-0 [11]	13-6 [11]	15-0	17-0 [15]	19-0 [16]		13-6	13-6	22-0	22-0	22-0	22-0 [3]	H		8-0	8-0	8-0	8-0 [1]	7-0 [2]	7-0	0-4	4-6	0-8	5-1 [7]	CFH	5-8	8-3	2-8				8-0	6-3 [9]	8-0	7-0	8-0
KANSAS	DOCK 58144-R	1958	14-0	14-0	14-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	22-6	23-0	17-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	7-0 [4]	7-0 [5]	0-8	5-0	4-0	5-9 [5]	4-0	8-0	8-6	3-0	6-0	0-4	3-0	8-6	8-6	6-8 [10]	8-6	8-6
KENTUCKY	STATUTES	1942											22-0																									
MINNESOTA	STATUTES	1952	14-0	14-0	14-0	17-0	19-0	14-0	14-0	14-0	22-0	22-0	22-0	22-0	22-0 [2]	22-0	8-6	8-6	8-6	8-6	8-6 [2]	8-6		8-6					8-6					8-6	8-6	8-6	8-6	8-6
MISSOURI	G.O. 24	1959	14-0	14-0	14-0	17-0	19-0	14-0	14-0	13-6	22-0	22-0	22-0	22-0	22-0	22-0	8-6	8-0	8-6	8-6	8-6 [2]	8-6	0-4	4-6	0-8	5-1 [7]	CFH	5-9	8-6	4-0	5-0 TO 8-0	0-3	4-2	8-6	6-5 [9]	8-6	8-6	8-6
MONTANA	ORDER 2597	1958	14-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	8-6 [2]	8-6	0-8	4-8	4-0	5-9 [6]	4-0	8-6 [8]	8-0	3-0	6-0	0-4	3-0	8-6	8-6	5-9	8-6	8-6
NEBRASKA	ORDER 24501	1963	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	23-0	23-0	17-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	7-0 [2]	7-0 [5]	0-8	5-0	4-0	5-9 [5]	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	6-8 [10]	8-6	8-6
NORTH DAKOTA	STATUTES	1943	13-0	13-0	13-0	13-0	13-0	13-0	13-0	13-0	21-0 [1]	21-0 [1]	21-0	21-0 [1]	21-0	21-0	8-0 [1]	8-0 [1]	8-0	8-0 [1]	8-0	8-0					4-0	8-0	8-0					8-0	8-0	8-0	8-0	8-0
OREGON	ORDER 33700	1955	15-0	14-0	15-0	20-0	20-0	14-0	13-0	13-0	22-6	22-6	22-6	22-6	18-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	8-6	8-6	0-8	4-8			4-0	7-3 [8]	8-6	3-0	6-0	0-4	3-0	8-6	8-6	7-8	8-6	8-6
SOUTH DAKOTA	ORDER F2465	1957									22-6	22-6	22-6 [1]	22-6	17-0	22-6	8-6	8-0	8-0 [1]	8-6	7-0	8-6	0-8	4-8	CFH	5-9 [6]			8-0			0-4	3-0	8-6	8-6	8-6	8-6	8-6
TEXAS	STATUTES	1948									22-0	22-0	22-0	22-0 [1]	22-0 [2]	22-0	8-6	7-6	8-6	8-6 [1]	8-6 [2]	8-6	1-0	4-6					8-6	2-6	5-6	0-6	4-0	8-6	E	7-0	8-6	8-6
WASHINGTON	G.O. T-8499	1969	14-0	14-0	15-0	20-0	20-0	14-0	23-0	13-0	22-6	22-6	22-6	22-6	18-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	8-6 [2]	8-6	0-8	4-8	4-0	7-3 [6]	4-0	8-6 [8]	8-0	3-0	6-0	0-4	3-0	8-6	8-6	7-3 [6]	8-6	8-0
WISCONSIN	STATUTES	1967	14-0	14-0	14-0	14-0	14-0	14-0	14-0	14-0	22-0	22-0 [1]	22-0	22-0 [1]	22-0	22-0	8-6	E	8-6	8-6 [1]	8-6	8-6	0-4 0-8	4-6 5-1	1-9	6-0 [7]	5-0	6-4	8-6	E	E	E	E	12-0	E	8-6	8-6	8-6
WYOMING	DOCK 9287	1959	14-0	14-0	15-0	17-0	20-0	14-0	13-0	13-0	22-6	22-0	23-6	23-0	17-0 [2]	18-0 [3]	8-6	8-0	8-6	8-0	7-0 [2,4]	7-0 [5]	0-8	5-0	4-0	5-9 [6]	4-0	8-6	8-6	3-0	6-0	0-4	3-0	8-6	8-6	6-8 [10]	8-6	8-6
BURLINGTON NORTHERN [18]		1970	14-0 [19]	14-0	15-0	20-0	20-0	14-0	14-0		23-0	23-0	23-0	23-0			8-6	8-6	8-6	8-6									8-6		6-0			14-5			8-6	8-6

THIS CHART FOR INFORMATION ONLY - NO LIABILITY CAN BE ASSUMED

ARCHITECTS, CONTRACTORS, ETC., SHOULD CHECK WITH RAILROAD INVOLVED

DIMENSIONS: SHOWN IN FEET AND INCHES.
ARE FOR TANGENT TRACK - MOST LAWS SPECIFY INCREASES FOR CURVED AND SUPERELEVATED TRACK.
VERTICAL - MEASURED FROM TOP OF RAIL, EXCEPT CANADA - BASE OF RAIL FOR OTHER THAN PLATFORMS.
HORIZONTAL - MEASURED FROM CENTER LINE OF TRACK.
APPLY TO NEW CONSTRUCTION. SOME RECONSTRUCTION AND SOME EXTENSIONS.
SOME CAN BE VARIED UPON APPROVAL OF APPLICATION BY GOVERNING BODY.
ARE BASED ON MAXIMUM CAR SIZE FOR CALIFORNIA, IDAHO, MINNESOTA, MONTANA, NORTH DAKOTA, OREGON AND WASHINGTON.
ALL ARE MINIMUM EXCEPT COLUMNS 24, 26, 28, 31 AND 33 WHICH ARE MAXIMUM.

CFH - CAR FLOOR HEIGHT
E - EXEMPT
H - HEIGHT OF CAR GOVERNS

COLUMN 2 SHOWS BASIC REGULATION
3 SHOWS BASIC DATE OR DATE OF LATEST AMENDMENT
7 & 8 APPLY TO HAND AND MECHANICALLY OPERATED SWITCHES EXCEPT AS NOTED
12 & 18 PREVAILS FOR ALL ITEMS NOT OTHERWISE PROVIDED FOR
13 & 19 BRIDGES SUPPORTING TRACKS
14 & 20 BRIDGES SPANNING TRACKS
24 & 25 PASSENGER PLATFORMS
26 & 27 FREIGHT PLATFORMS ON SIDE TRACKS EXCEPT AS NOTED
28 & 29 FREIGHT PLATFORMS ON SIDE TRACKS STEPPED PLATFORMS ARE NOT GENERALLY ALLOWED
35 OTHER THAN TROLLEY CONTACT POLES
36 TO CENTER OF STAND EXCEPT AS NOTED
37 APPLIES TO BOTH SUPPORTS AND PLATFORMS EXCEPT AS NOTED

1 LESSER CLEARANCES NOT PERMITTED IN QUADRANTS
2 ENGINE HOUSES AND SHOP BUILDINGS EXEMPT OR PERMITTED LESSER D MENSIONS
3 ONLY IF TRACKS END WITHIN BUILDINGS
4 MAY BE REDUCED TO 5-9 IF 8-3 (8-6 FOR WYOMING) PROVIDED ON OPPOSITE SIDE
5 MAY BE REDUCED TO 5-9 IF 8-0 (8-6 FOR NEB. & WYO.) PROVIDED ON O POSITE SIDE
6 ONLY IF 8-0 (7-3 FOR MONT. & WYO.; 8-6 FOR S. DAK.) PROVIDED ON OPP SITE SIDE
7 PASSENGER PLATFORMS ONLY
8 MAY BE 8-0 AT 4-6 FOR REFRIGERATOR CAR PLATFORMS ONLY
9 TO ENDS OF ARMS IN OPERATING POSITION
10 FOR PLATFORMS AT CAR EAVE HEIGHT - SUPPORTS TO BE 8-0 (8-6 FOR TEXAS)
11 FOR FREIGHT TRACKS - CAN BE 13-0 FOR PASSENGER TRACKS
12 REGARDING CANADA - CHECK STANDARD CLEARANCE DIAGRAM, APPROVED BY BOARD OF TRANSPORT COMMISSIONERS FOR CANADA, FOR RAILWAY INVOLVED
13 NOT LESS THAN 5-8 AND NOT MORE THAN 6-2
14 MEASURED FROM BASE OF RAIL
15 FOR HAND OPERATED SWITCHES - MAY BE 15-0 FOR MECHANICALLY OPERATED SWITCHES
16 FOR HAND OPERATED SWITCHES - MAY BE 17-0 FOR MECHANICALLY OPERATED SWITCHES
17 IF LESS THAN 22-6 TELL TAILS ARE REQUIRED
18 IF NO FIGURE IS GIVEN USE STATUTORY CLEARANCE
19 15-0 FOR NEW CONSTRUCTION AND STATE OF OREGON

EXHIBIT "G"

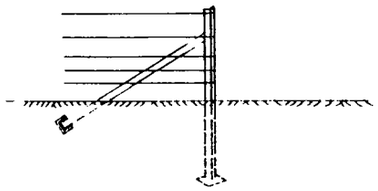
STATUTORY & B.N. CLEARANCE REQUIREMENTS IN STATES SERVED BY B.N.

ENGINEERING DIVISION, ST. PAUL, MINN. DECEMBER 1, 1973

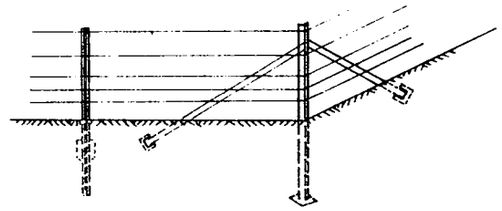
Dwg Nº C-2509.2

Revised 10-76, 10-79
THIS PLAN SUPERSEDES PLAN Nº. C-2509.1

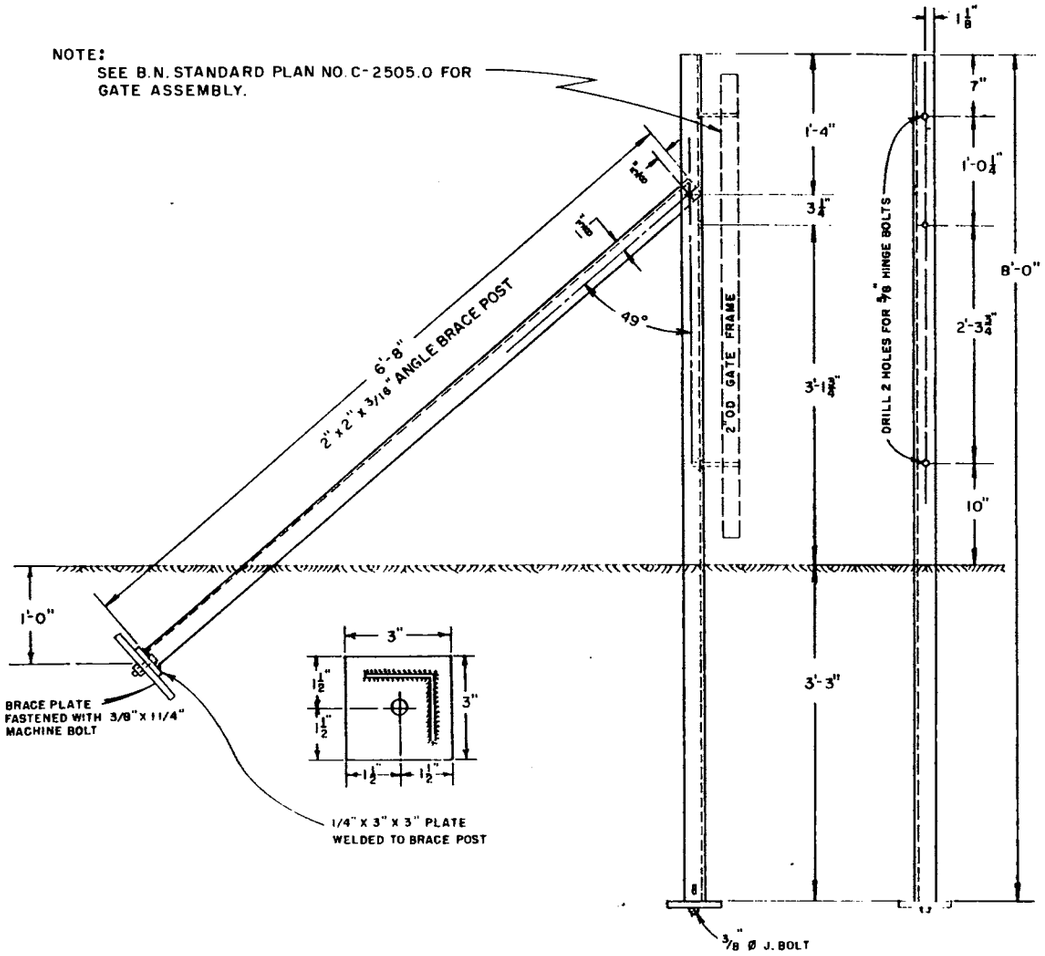
END POST ASSEMBLY



CORNER POST ASSEMBLY

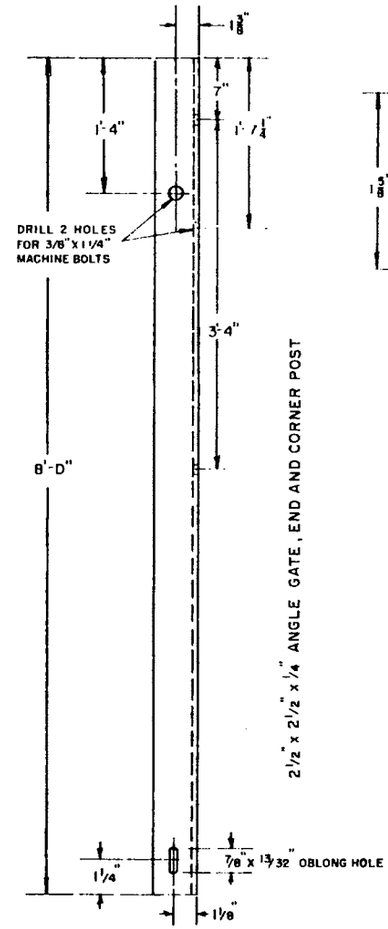


NOTE:
SEE B.N. STANDARD PLAN NO. C-2505.0 FOR GATE ASSEMBLY.



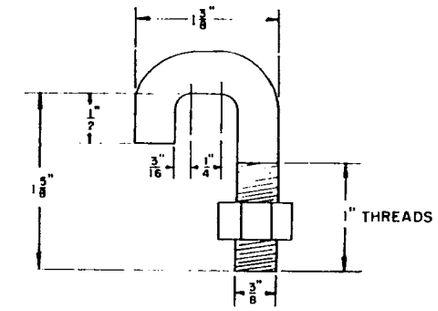
FRONT VIEW

SIDE VIEW

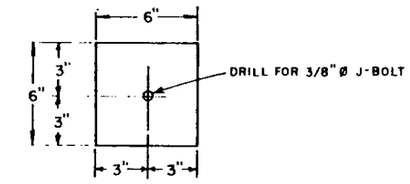


DETAIL OF GATE, END & CORNER POST

FRONT VIEW



3/8" x 1 5/8" J-BOLT



3/16" x 6" x 6" POST BASE AND BRACE PLATE

BURLINGTON NORTHERN INC.
STANDARD PLAN

GATE, END AND CORNER POST

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended
B.H. Anderson
Asst. Vice President Engineering

Approved
J.C. Thington
Vice President, Operations

Dwg. Nº C-2510.1

THIS PLAN SUPERSEDES PLAN C-2510.0

SIGN SPECIFICATIONS

SIGN NO.	NAME	PLATE			LETTERS - NUMERALS - ETC.						PLATE SPECIFICATIONS					B.N. POST NO.	REMARKS
		COLOR	PRESSURE SENSITIVE	HEAT ACTIVATED	SERIES	SIZE	COLOR	PRESSURE SENSITIVE	HEAT ACTIVATED	SCREEN PROCESS	THICKNESS .064	THICKNESS .081	THICKNESS EX.①	BLANK SIZE	PUNCH OR BOLT SIZE		
6	Advance Warning Speed	Yellow	3271Ⓐ	2271Ⓐ	D	6"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			10"x20"	3/8"x2 1/2" Bolt②	1	⑩ ⑭
7	Speed Sign	"	"	"	"	"	"	"	"	"	X			"	"	"	" "
8	Advance Warning Speed	"	"	"	"	"	"	"	"	"	X			"	"	"	" "
9	Speed Sign F & P	"	"	"	"	"	"	"	"	"	X			"	"	"	" "
10	Portable Train Control	Yellow Red Green	3271 3272 3277Ⓐ	2271 2272 2277Ⓐ	—	—	—	—	—	—		X		16"x24"	3/8"x1 1/2" Bolt②	Fork	⑨ Yellow-2271, Red-2272, Green-2277
11	Junction One Mile	White	3290Ⓐ	2290Ⓐ	C-F	4" 8"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			18"x24"	3/8"x2 1/2" Bolt②	1	⑩ "
12	Junction 800 Ft.	"	"	"	"	"	"	"	"	"	X			"	"	"	" "
13	R.R. Xing 1 Mile Protected	"	"	"	C	"	"	"	"	"	X			"	"	"	" "
14	R.R. Xing 800 Ft. Not Protected	"	"	"	"	"	"	"	"	"	X			"	"	"	" "
15	Yard Limit One Mile	"	"	"	C-F	"	"	"	"	"	X			"	"	"	" "
16	Yard Limit	"	"	"	E	12"	"	"	"	"	X			"	"	"	" "
17	Switching Limits	"	"	"	C	3"	"	"	"	"	X			12"x24"	"	"	" "
18	End Double Track	"	"	"	"	4"	"	"	"	"	X			22"x24"	"	"	" "
19	No Engine Beyond This Point	"	"	"	"	3"	"	"	"	"	X			15"x24"	"	"	" "
20	Spring Switch	Yellow	3271Ⓐ	2271Ⓐ	D	12"	"	"	"	"	X			16" Dia.	"	"	⑪ "
21	Test Mile	White	3290Ⓐ	2290Ⓐ	C	5"	"	"	"	"	X			18"x19 1/2"	"	"	⑩ "
22	Stop "RRX" "RRJ" "RRDS"	"	"	"	"	6"	"	"	"	"	X			24"x24"	"	"	" "
23	Crossing Whistle	"	"	"	"	8"	"	"	"	"	X			9"x12"	"	"	" "
24	End Automatic Block	"	"	"	"	5"	"	"	"	"	X			18"x19 1/2"	"	"	" "
25	One Mile Switch	"	"	"	"	3" 12"	"	"	"	"	X			12"x24"	"	"	" "
26	End CTC	"	"	"	"	5"	"	"	"	"	X			18"x19 1/2"	"	"	" "
27	Trainmen Warning	"	"	"	"	2"	"	"	"	"	X			19"x36"	"	"	" "
28	Derail	"	"	"	"	3"	"	"	"	"	X			4"x24"	"	3	⑫ "
29	Signal Overlap	"	"	"	"	4"	"	"	"	"	X			15"x24"	"	1	⑨ "
30	Draw Span One Mile	"	"	"	"	6"	"	"	"	"	X			18"x24"	"	"	" "
31	Fouling Point	Yellow	3271Ⓐ	2271Ⓐ	"	"	"	"	"	"	X			9"x12"	"	"	⑬ "
32	Verification Point	White	3290Ⓐ	2290Ⓐ	"	"	"	"	"	"	X			10"x20"	"	"	⑭ "
33	Resume Speed	Green	3277Ⓐ	2277Ⓐ	—	—	—	—	—	—	X			"	"	"	"
34	Crossing Signal Re-Start	White	3290Ⓐ	2290Ⓐ	C	4"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			18"x24"	"	"	⑨
35	Crossing Signal Start	"	"	"	"	"	"	"	"	"	X			"	"	"	"
36	Signal Clearing Section	"	"	"	"	"	"	"	"	"	X			"	"	"	"
37	*CANCELLED*																
38	*CANCELLED*																
39																	
40																	
41	Hazard	White	3290Ⓐ	2290Ⓐ	⑬	⑮	Red Black	3651 Ⓓ 180-23 3655 180-12Ⓔ	605Ⓓ	712 705Ⓕ	X			10"x14" 10"x18" 22"x24"	—	—	⑮
42	Approved List (For Sign No.41)	—	—	—	—	—	Black	3655Ⓓ180-12Ⓔ	"	705Ⓕ	—	—	—	—	—	—	"
43	Restricted Clearance (Bridges)	White	3290Ⓐ	2290Ⓐ	D	6"	"	"	"	"		X		13 1/2"x96"	9/16" Dia. Holes	—	
44	No Clearance	"	"	"	C	3"	"	"	"	"	X			4"x42", 10"x24"	7/16" Dia. Holes	1	
45	Danger	"	170-10, 180-10Ⓔ	—	"	4" 2"	"	"	"	"	X			18"x24"	3/8"x2 1/2" Bolt②	"	

NOTE: CROSSBUCK BLADE SHALL BE CONSTRUCTED OF A .078" MINIMUM THICKNESS EXTRUDED ALUMINUM SECTION, 6063-T6 ALLOY AND TEMPER. SIGN BLADE SHALL BE CONSTRUCTED OF .063" OR .080" MINIMUM THICKNESS SHEET ALUMINUM, 6061-T6 OR 5052-H38 ALLOY AND TEMPER. PUNCH HOLES PER PLAN. AFTER DEGREASING AND TREATMENT OF ALUMINUM APPLY PLATE COVER TO FACE OF SIGN AND U.S. BUREAU OF PUBLIC ROADS ADMINISTRATION STANDARD LETTERS, NUMERALS ETC. IN THE SERIES AND SIZE LISTED ABOVE. SEE PLAN FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

① Extrude Aluminum Section per current AAR specifications.
② Fasten sign to post in field using galvanized or cadmium plated bolts, washers, nuts and nut locks.
③ 1/2"x4" galvanized Timber Drive Spikes with 21/32" I.D. nylon, or 5/8" galvanized or cadmium plated, washers.
④ 3/8"x4" galvanized Screw Drive Spike.
⑤ 3/8"x4" lag screws and washers.
⑥ 1/2"x5" Hot Dipped galvanized hex head lag screws and washers.
⑦ 2" no. 9 gage galvanized barbed roofing nails.
⑧ 2 1/2" no. 10 gage aluminum barbed nails w/neoprene washer.
⑨ Place sign 14'-0" from center line of track.
⑩ No. 9 Ⓐ, on right hand side. ⑪ No. 9 Ⓐ, on turnout side.
⑫ No. 9 Ⓐ, opposite first derail ⑬ No. 9 Ⓐ, opposite insulated joint located farthest from point of switch.
⑭ See appendix "A" pp. 2 for additional specification & instructions.
⑮ Sign shall be made in accordance with American Standards Association Specifications for Industrial Accident Prevention Signs.

Ⓐ SCOTCHLITE Engineer Grade Ⓑ SCOTCHLITE with CONTROLTAC Engineer Grade
Ⓒ SCOTCHLITE High Intensity Grade Ⓓ SCOTCHCAL
Ⓔ SCOTCHCAL with CONTROLTAC Ⓕ Series 700 Ink for Engineer Grade
Ⓖ Series 800 Ink for High Intensity Grade

Revised 1-80, 12-80, 8-81
THIS PLAN SUPERSEDES PLAN Nº C-3000.2 Dwg. Nº C-3000.3 Sh. 1

SIGN SPECIFICATIONS

SIGN NO.	NAME	PLATE			LETTERS - NUMERALS - ETC.						PLATE SPECIFICATIONS					B.N. POST NO.	REMARKS
		COLOR	PRESSURE SENSITIVE	HEAT ACTIVATED	SERIES	SIZE	COLOR	PRESSURE SENSITIVE	HEAT ACTIVATED	SCREEN PROCESS	THICKNESS .064	THICKNESS .081	THICKNESS EX.①	BLANK SIZE	PUNCH OR BOLT SIZE		
46	Warning Underground Cable	Yellow	3271Ⓐ	2271Ⓐ	C	2", 1", 1/2"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			10"x11"	3/8"x2 1/2" Bolt②	1	
47	Men Working	Orange Yellow	3284Ⓐ 3271Ⓐ	2284Ⓐ 2271Ⓐ	D	5" 8"	"	"	"	"		X		30"x30", 48"x48"	—	—	
48																	
49																	
50																	
51																	
52																	
53																	
54																	
55																	
61,63	Highway Crossing	White	3870Ⓒ	2870Ⓒ	C	6"	Black	3655Ⓓ170-12Ⓔ	—	805Ⓖ			X	9"x48"	21/32" Dia. Holes③	14,15	
62	Highway Crossing	"	"	"	"	"	"	"	—	"			X	9"x60"	"	13	
61,62,63	Multiple Track Sign	"	3290Ⓐ	2290Ⓐ	D	4" 5"	"	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ		X		9"x14", 8"x26"	7/16" Dia. Holes⑤	C-3002.0	
64	Stop	(See Remarks)	—	—	—	—	—	—	—	—		X		24"x24", 30"x30"	3/8"x4" ④	—	PRE-SCREENED SIGN FACE CAT. NO. 2R1-1
65	Advance Warning	"	—	—	—	—	—	—	—	—		X		36" Dia.	3/8"x2 1/2" Bolt②	1,2	PRE-SCREENED SIGN FACE CAT. NO. 2W10-1
66	Private Crossing	White	3290Ⓐ	2290Ⓐ	C	3", 2", 1 1/2"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ		X		21"x21"	"	1	
67	Private Crossing California	"	"	"	"	3", 2", 1"	"	"	"	"		X		18"x30"	"	2	
68																	
69																	
70																	
81	No Trespassing	White	170-10Ⓔ	—	C	3" 2"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			15"x24"	3/8"x2 1/2" Bolt②	1	
82	Station	"	"	—	D	12"	"	"	"	"		X		22"x72+"	9/16" Dia. Holes⑤	14	
83	Westward Siding	"	3290Ⓐ	2290Ⓐ	C-F	4" 6"	"	"	"	"	X			18"x24"	3/8"x2 1/2" Bolt②	1	⑨
84																	
85																	
86																	
87																	
88																	
101	Milepost	White	3290Ⓐ	2290Ⓐ	C	8"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			12"x14" 12"x20" 12"x22"	3/8"x2 1/2" Bolt②	1	⑩
102	Milepost in CTC Territory	"	"	"	"	6"	"	"	"	"	X			10"x23" 10"x28" 10"x32"	"	—	
118																	
119																	
120																	
121	Flanger	Black	9285CⒷ 3285CⒶ	—	—	—	—	—	—	—		X		5"x21 3/8"	3/8"x2 1/2" Bolt②	1	⑩
122	Tunnel	White	3290Ⓐ	2290Ⓐ	C	4"	Black	3655Ⓓ180-12Ⓔ	605Ⓓ	705Ⓕ	X			15"x20"	"	"	"
123	Maintenance of Way Flag	Red Green Yellow	—	—	—	—	—	—	—	—	—	—	—	—	—	—	Vinal Fabric
124	Curve Tag	—	—	—	—	—	—	—	—	—	X			1 1/4"x2"	5/32" Dia. Holes⑦	—	
125	Ownership and Maintenance	—	—	—	—	—	—	—	—	—	—	—	—	6 3/4"x8"	5/32" Dia. Holes⑧		
126																	
127																	

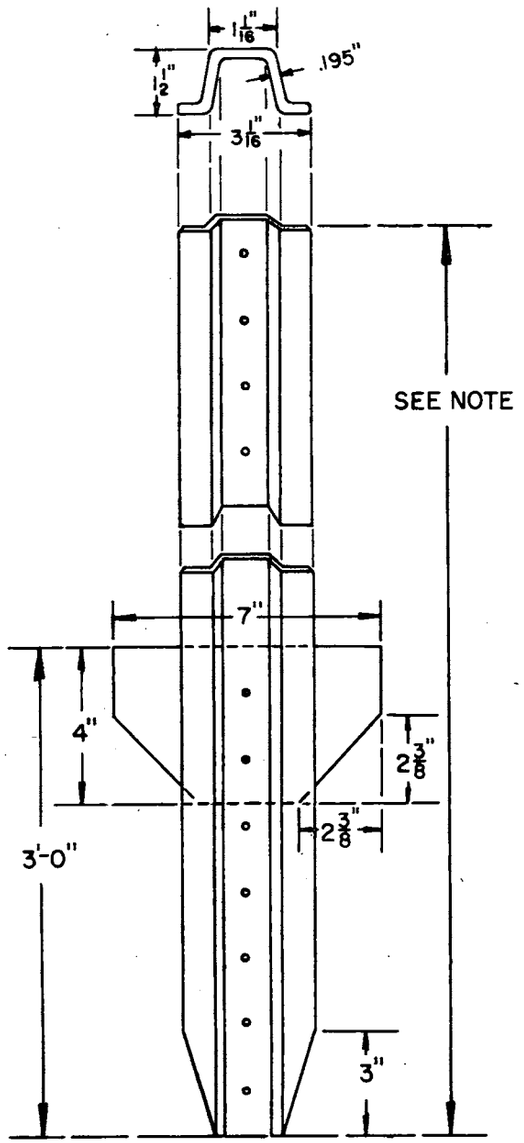
NOTE: CROSSBUCK BLADE SHALL BE CONSTRUCTED OF A .078" MINIMUM THICKNESS EXTRUDED ALUMINUM SECTION, 6063-T6 ALLOY AND TEMPER. SIGN BLADE SHALL BE CONSTRUCTED OF .063" OR .080" MINIMUM THICKNESS SHEET ALUMINUM, 6061-T6 OR 5052-H38 ALLOY AND TEMPER. PUNCH HOLES PER PLAN. AFTER DEGREASING AND TREATMENT OF ALUMINUM APPLY PLATE COVER TO FACE OF SIGN AND U.S. BUREAU OF PUBLIC ROADS ADMINISTRATION STANDARD LETTERS, NUMERALS ETC. IN THE SERIES AND SIZE LISTED ABOVE. SEE PLAN FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

① Extrude Aluminum Section per current AAR specifications.
② Fasten sign to post in field using galvanized or cadmium plated bolts, washers, nuts and nut locks.
③ 1/2"x4" galvanized Timber Drive Spikes with 21/32" I.D. nylon, or 5/8" galvanized or cadmium plated, washers.
④ 3/8"x4" galvanized Screw Drive Spike.
⑤ 3/8"x4" lag screws and washers.
⑥ 1/2"x5" Hot Dipped galvanized hex head lag screws and washers.
⑦ 2" no. 9 gage galvanized barbed roofing nails.
⑧ 2 1/2" no. 10 gage aluminum barbed nails w/neoprene washer.
⑨ Place sign 14'-0" from center line of track.
⑩ No. 9 Ⓐ, on right hand side. ⑪ No. 9 Ⓐ, on turnout side.
⑫ No. 9 Ⓐ, opposite first derail ⑬ No. 9 Ⓐ, opposite insulated joint located farthest from point of switch.
⑭ See appendix "A" pp. 2 for additional specification & instructions.
⑮ Sign shall be made in accordance with American Standards Association Specifications for Industrial Accident Prevention Signs.

Ⓐ SCOTCHLITE Engineer Grade Ⓑ SCOTCHLITE with CONTROLTAC Engineer Grade
Ⓒ SCOTCHLITE High Intensity Grade Ⓓ SCOTCHCAL
Ⓔ SCOTCHCAL with CONTROLTAC Ⓕ Series 700 Ink for Engineer Grade
Ⓖ Series 800 Ink for High Intensity Grade

Revised 12-80, 8-81
THIS PLAN SUPERSEDES PLAN Nº C-3000.1 Dwg. Nº C-3000.2 Sh. 2

TOP VIEW



NOTE:

B.N. INC. POST NO. 1 TO BE 11'-0" WITH ANCHOR PLATE
" " " " NO. 2 " " 13'-0" " " "
" " " " NO. 3 7'-0" " " "

PROPERTIES OF U TYPE STEEL SIGN POST

SECTION MODULUS		MOMENT OF INERTIA		POLAR MOMENT OF INERTIA
AXIS 1-1	AXIS 2-2	AXIS 1-1	AXIS 2-2	
.3503	.3599	.2396	.5511	.7907

WEIGHT PER LINEAL FOOT 2.75 LBS.
MADE FROM NEW BILLET STEEL
CONFORMS TO ASTM-A107 GRADE 1060

PUNCHING: 7/16" DIAMETER HOLES ON 3" CENTERS FULL LENGTH OF STOCK SIZE POSTS, STARTING 1 1/2" FROM TOP OF POST. POSTS TO BE PAINTED BLACK.

ANCHOR PLATE TO BE 1/8" THICK, WEIGHT 0.7 LBS. FASTEN TO POST WITH TWO 5/16" DIA. RIVETS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

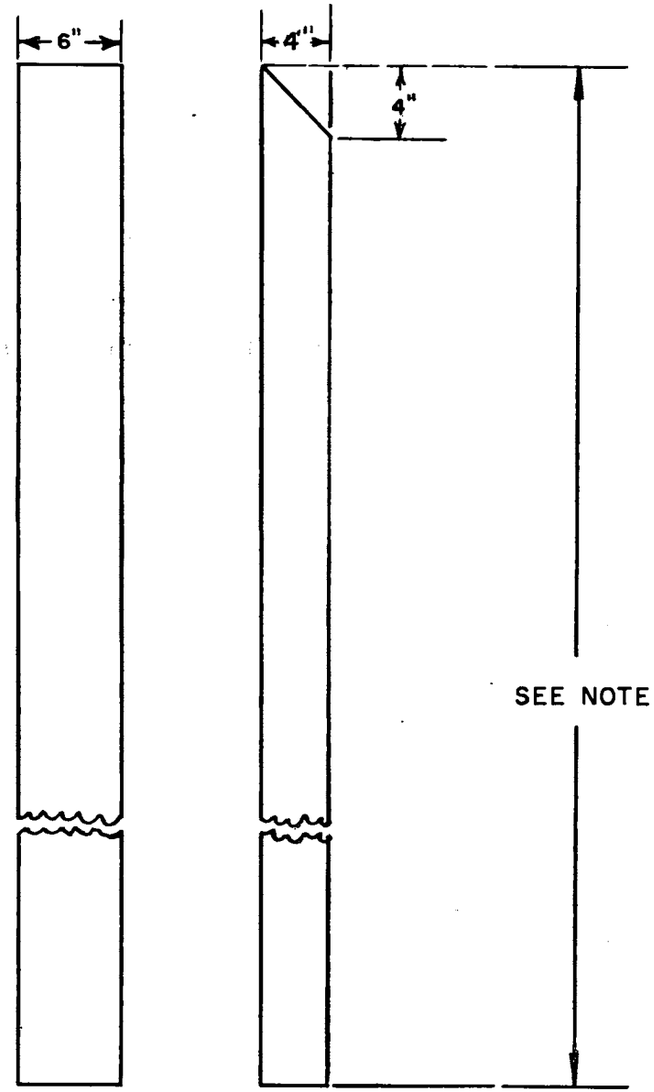
SIGN POST

ENGINEERING DIVISION, ST. PAUL, MINN. APR. 1971.

Recommended — Asst. Vice President Engineering

Approved — Vice President Operations

Dwg. Nº C-3001.0



NOTE

B.N. INC. POST NO. 13 TO BE 13'-0" LONG
" " " " 14 " " 14'-0" "
" " " " 15 " " 15'-0" "

SPECIFICATIONS

POST TO BE 4"x6" NOMINAL FIR AND TO BE FRAMED BEFORE TREATING WITH 8 POUND 50-50 CREOSOTE PETROLEUM SOLUTION.

BURLINGTON NORTHERN INC.
STANDARD PLAN

WOOD SIGN POST

ENGINEERING DIVISION, ST. PAUL, MINN. APR. 1971

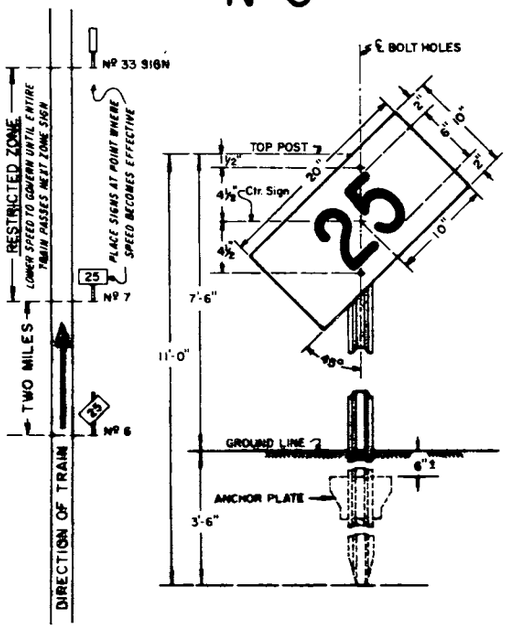
Recommended — Asst. Vice President Engineering

Approved — Vice President Operations

REV. 10-28-77
THIS PLAN SUPERSEDES PLAN Nº C-3002.0

Dwg. Nº C-3002.1

№ 6



INSTRUCTIONS

ADVANCE WARNING SIGNS ARE, AS FAR AS FEASIBLE, LOCATED TWO MILES IN ADVANCE OF A LOWER SPEED SIGN. (TO BE USED ON LINES WHERE ONLY FREIGHT TRAINS OPERATE.) SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"ADVANCE WARNING SPEED" SIGN

CORRECT — ASST. VICE PRESIDENT ENGINEERING

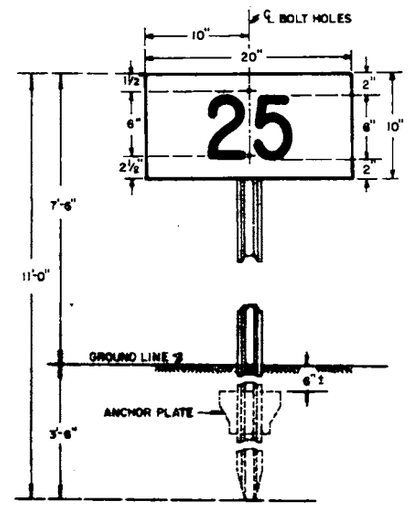
APPROVED — VICE PRESIDENT OPERATIONS

Revised 11-71, 8-72, 1-74, 10-79

C-3006.4 THIS SIGN SUPERSEDES PLAN № C-3006.3

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. SEPT. 1971

№ 7



INSTRUCTIONS

PLACE SIGN AT POINT SPEED SHALL BECOME EFFECTIVE (TO BE USED ON LINES WHERE ONLY FREIGHT TRAINS OPERATE.) SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"REDUCE SPEED" SIGN

CORRECT — ASST. VICE PRESIDENT ENGINEERING

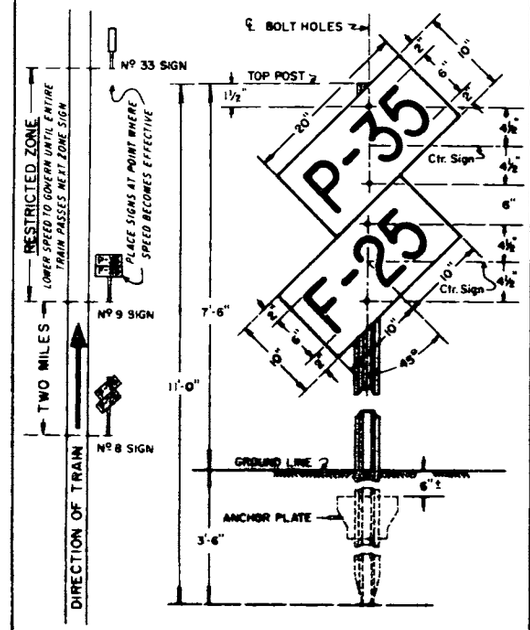
APPROVED — VICE PRESIDENT OPERATIONS

10-79
Revised 11-71, 1-72, 8-72, 1-74,

C-3007.5 THIS SIGN SUPERSEDES PLAN № C-3007.4

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. SEPT. 1971

№ 8



INSTRUCTIONS

ADVANCE WARNING SIGNS ARE, AS FAR AS FEASIBLE, LOCATED TWO MILES IN ADVANCE OF A LOWER SPEED SIGN. (ON THOSE LINES WHERE BOTH FREIGHT AND PASSENGER TRAINS OPERATE). SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"ADVANCE WARNING SPEED" SIGN

CORRECT — ASST. VICE PRESIDENT ENGINEERING

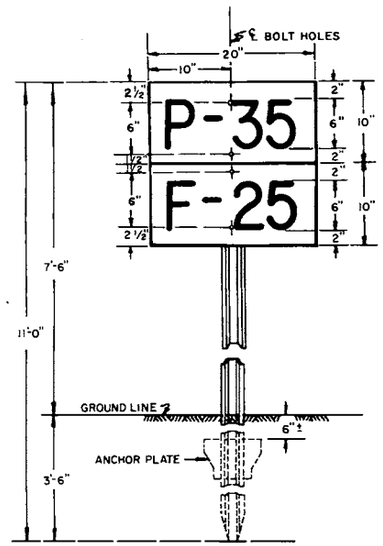
APPROVED — VICE PRESIDENT OPERATIONS

Revised 11-71, 8-72, 1-74, 10-79, 1-80

C-3008.5 THIS SIGN SUPERSEDES PLAN № C-3008.4

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. SEPT. 1971

Nº 9



INSTRUCTIONS

SUPERINTENDENT SHALL DETERMINE WHERE SIGNS ARE REQUIRED AND RATE OF SPEED. SIGNS TO BE LOCATED AT THE BEGINNING OF A SPEED ZONE. (ON THOSE LINES WHERE BOTH FREIGHT AND PASSENGER TRAINS OPERATE.) SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS

"REDUCE SPEED" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

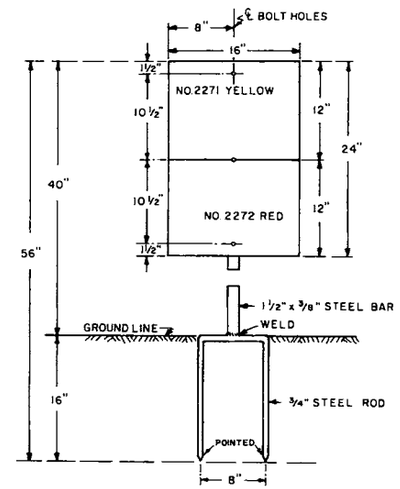
APPROVED
VICE PRESIDENT OPERATIONS

Revised 1-72, 8-72, 1-74, 10-79

C-3009.4 THIS SIGN SUPERSEDES PLAN Nº C-3009.3

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. JUNE 1971

Nº 10



INSTRUCTIONS

POST TO BE ⅜" x 1½" STEEL BAR 40" LONG WELDED TO ¾" DIA. ROUND STEEL BAR FORK POST TO BE DRILLED FOR ⅜" BOLTS AT CENTERS SHOWN ABOVE. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

APPLICATION NO. 1 YELLOW
" " 2 RED
" " 3 GREEN
" " 4 YELLOW OVER RED

"PORTABLE TRAIN CONTROL" SIGN

(SPECIFY APPLICATION REQUIRED)

CORRECT
ASST. VICE PRESIDENT ENGINEERING

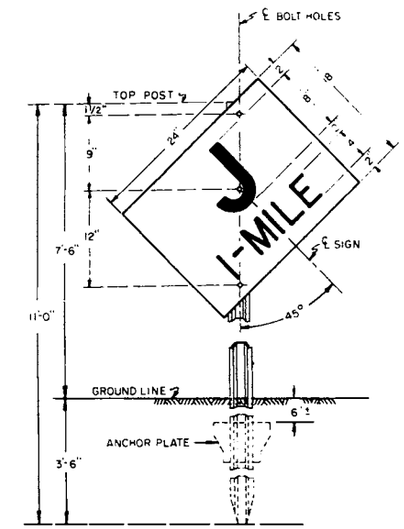
APPROVED
VICE PRESIDENT OPERATIONS

REVISED 8-72, 2-75, 7-76, 10-79

C-3010.4 THIS SIGN SUPERSEDES PLAN Nº C-3010.3

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 1971

Nº 11



INSTRUCTIONS

PLACE SIGN ONE MILE DISTANCE FROM JUNCTION. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"JUNCTION 1-MILE" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

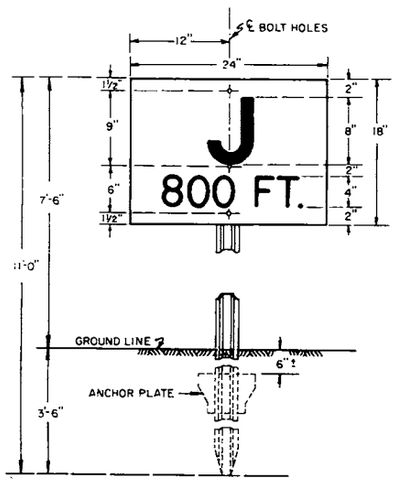
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3011.2 THIS SIGN SUPERSEDES PLAN Nº C-3011.1

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

Nº 12



INSTRUCTIONS

PLACE SIGN 800 FEET FROM JUNCTION. DO NOT USE WHERE JUNCTION IS PROTECTED BY INTERLOCKING SIGNALS. SEE B.N.INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"JUNCTION 800 FT." SIGN

CORRECT
B.H. Anderson
ASST. VICE PRESIDENT ENGINEERING

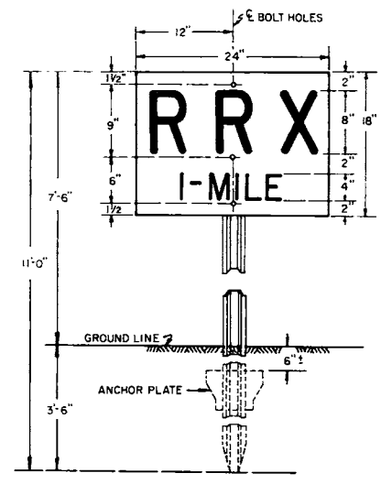
APPROVED
C.E. Finnegan
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3012.2 THIS SIGN SUPERSEDES PLAN Nº C-3012.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N.INC. ST PAUL, MINN APR 1971

Nº 13



INSTRUCTIONS

PLACE SIGN ONE MILE FROM RAILROAD CROSSING NOT PROTECTED BY INTERLOCKING SIGNALS. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"R.R. XING 1-MILE NOT PROTECTED BY INTERLOCKING SIGNALS" SIGN

CORRECT
B.H. Anderson
ASST VICE PRESIDENT ENGINEERING

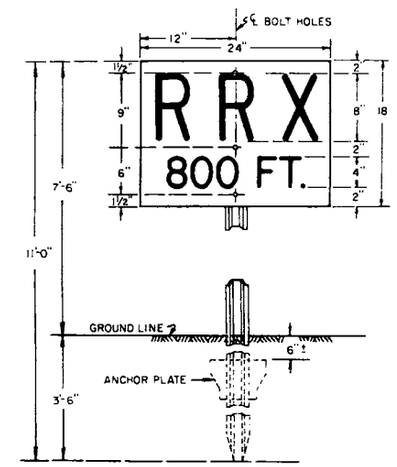
APPROVED
C.E. Finnegan
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3013.2 THIS SIGN SUPERSEDES PLAN Nº C-3013.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN APR. 1971

Nº 14



INSTRUCTIONS

PLACE SIGN 800 FEET FROM RAILROAD CROSSING NOT PROTECTED BY INTERLOCKING SIGNALS. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"R. R. XING NOT PROTECTED BY INTERLOCKING SIGNALS" SIGN

CORRECT
B.H. Anderson
ASST VICE PRESIDENT ENGINEERING

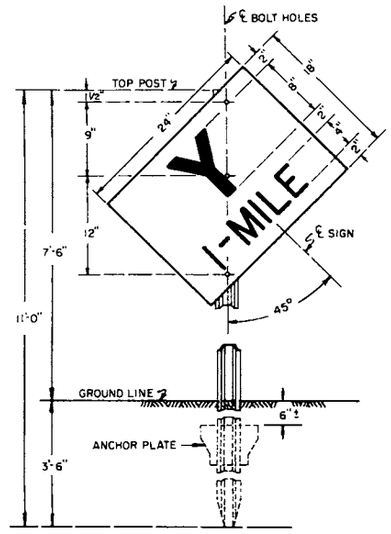
APPROVED
C.E. Finnegan
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3014.2 THIS SIGN SUPERSEDES PLAN Nº C-3014.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN APR 1971

№ 15



INSTRUCTIONS

PLACE SIGN ONE MILE AHEAD OF YARD LIMIT SIGN. SEE B.N. INC. DWG. C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"YARD LIMITS 1-MILE" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

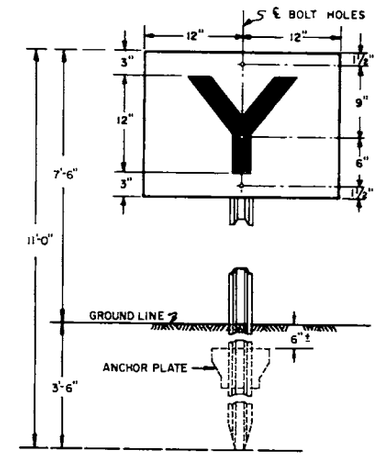
APPROVED
S. E. Thington
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3015.2 THIS SIGN SUPERSEDES PLAN № C-3015.1

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

№ 16



INSTRUCTIONS

PLACE SIGN ON RIGHT HAND SIDE APPROACHING YARD LIMITS. SUPERINTENDENT SHALL DETERMINE LOCATION OF SIGN. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"YARD LIMIT" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

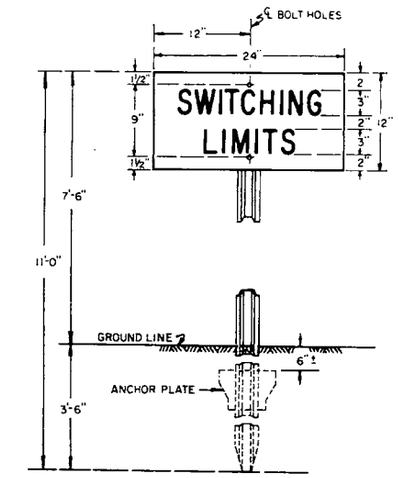
APPROVED
S. E. Thington
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3016.2 THIS SIGN SUPERSEDES PLAN № C-3016.1

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. JULY 197.

№ 17



INSTRUCTIONS

PLACE SIGN ON RIGHT HAND SIDE OF TRACK ENTERING SUCH LIMITS. SIGN TO BE LOCATED BY DIVISION SUPERINTENDENT. SEE B.N. INC DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"SWITCHING LIMITS" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

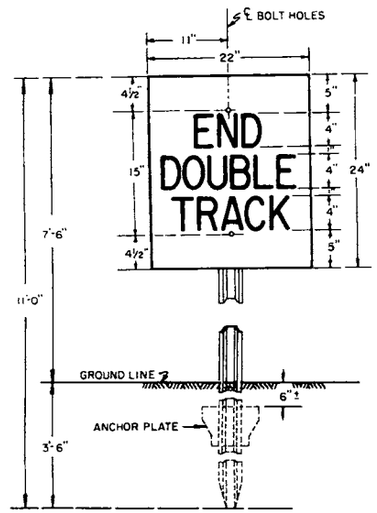
APPROVED
S. E. Thington
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3017.2 THIS SIGN SUPERSEDES PLAN № C-3017.1

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

№ 18



INSTRUCTIONS

PLACE SIGN OPPOSITE CLEARANCE POINT. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"END DOUBLE TRACK" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

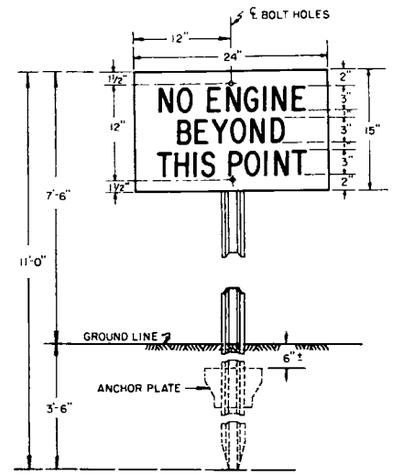
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3018.2 THIS SIGN SUPERSEDES PLAN № C-3018.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 971

№ 19



INSTRUCTIONS

PLACE SIGN AT A POINT WHERE INDICATIONS REQUIRE THAT A ENGINE SHOULD NOT PASS BEYOND A CERTAIN LIMIT. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITONAL SPECIFICATIONS AND INSTRUCTIONS.

"NO ENGINE BEYOND THIS POINT" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

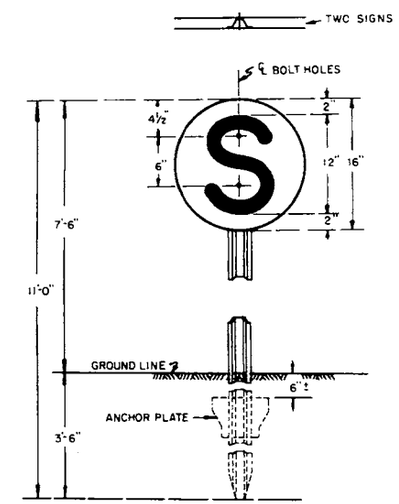
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3019.2 THIS SIGN SUPERSEDES PLAN № C-3019.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 971

№ 20



INSTRUCTIONS

PLACE SIGN ON TURNOUT SIDE WITH TARGET AT RIGHT ANGLES TO TRACK. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"SPRING SWITCH" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

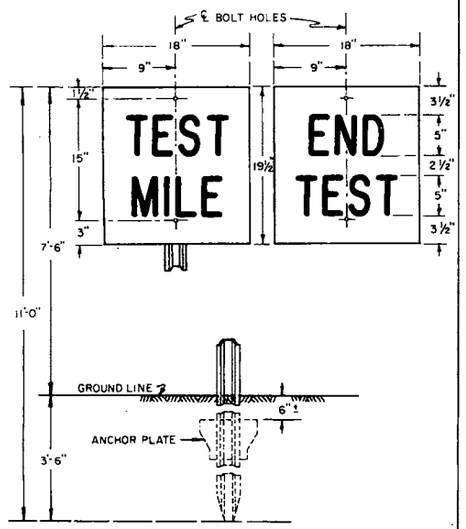
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3020.2 THIS SIGN SUPERSEDES PLAN № C-3020.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 971

Nº 21



INSTRUCTIONS

THE TWO SIGNS SHALL BE 5280 FEET APART. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"TEST MILE" SIGNS

CORRECT
ASST VICE PRESIDENT ENGINEERING

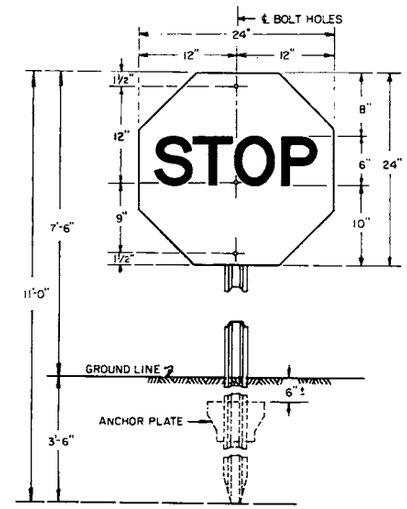
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3021.2 THIS SIGN SUPERSEDES PLAN Nº C-3021.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN APR. 971

Nº 22



INSTRUCTIONS

PLACE SIGN 200 FEET FROM JUNCTION, CROSSING, OR END OF DRAW SPAN NOT PROTECTED BY INTERLOCKING SIGNALS. SEE B.N. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

STOP SIGN FOR R. R. JUNCTIONS CROSSINGS & DRAW SPANS

CORRECT
ASST VICE PRESIDENT ENGINEERING

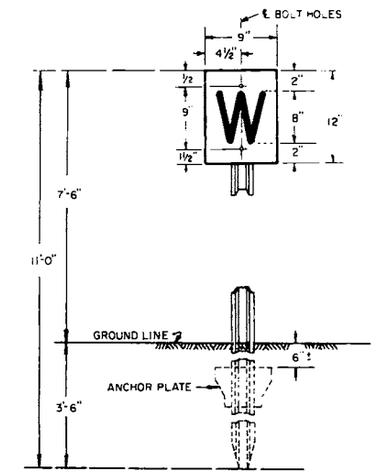
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3022.2 THIS SIGN SUPERSEDES PLAN Nº C-3022.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN APR. 971

Nº 23



INSTRUCTIONS

PLACE SIGN 1320 FEET FROM CROSSING. THIS SIGN IS NOT TO BE PLACED WITHIN STATION LIMITS WHERE WHISTLING IS PROHIBITED BY LAW. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"CROSSING WHISTLE" SIGN

CORRECT
ASST VICE PRESIDENT ENGINEERING

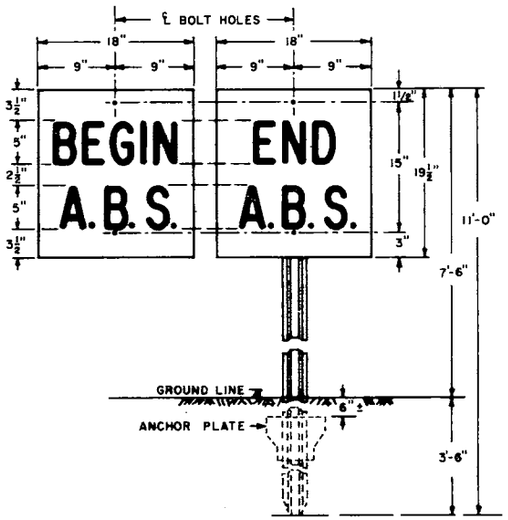
APPROVED
VICE PRESIDENT OPERATIONS

Revised 2-72, 8-72, 10-79

C-3023.3 THIS SIGN SUPERSEDES PLAN Nº C-3023.2

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN APR. 97

№ 24



INSTRUCTIONS

PLACE SIGN AT THE END OF LAST AUTOMATIC BLOCK SIGNAL CIRCUIT. SEE B. N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"BEGIN & END AUTOMATIC BLOCK SIGNAL" SIGN

CORRECT
ASST VICE PRESIDENT ENGINEERING

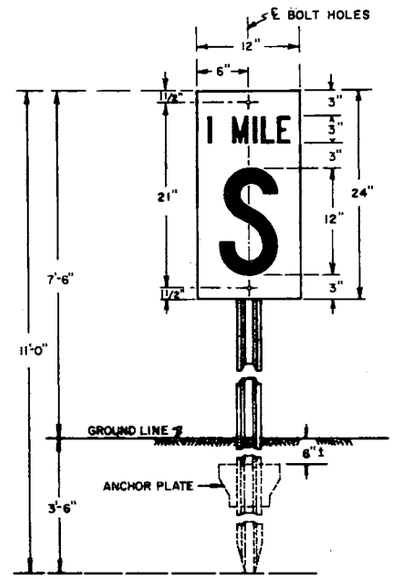
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 9-76, 10-79

C-3024.3 THIS SIGN SUPERSEDES PLAN № C-3024.2

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

№ 25



INSTRUCTIONS

PLACE SIGN ONE MILE FROM SWITCH OF OPERABLE SIDING IN NON-ABS MAIN LINE TERRITORY WHERE MORE THAN ONE TRAIN A DAY IS OPERATED. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"ONE MILE SWITCH" SIGN

CORRECT
ASST. VICE PRESIDENT ENGINEERING

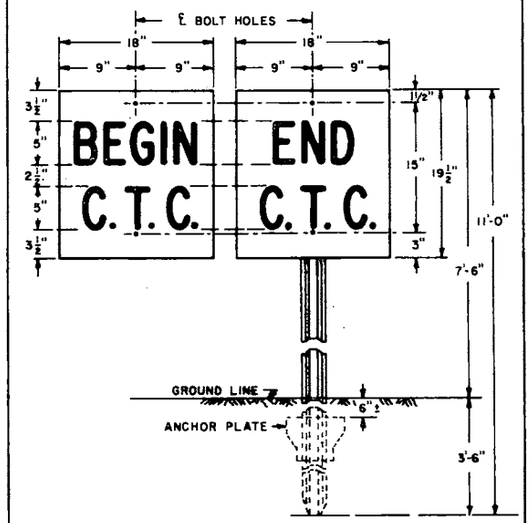
APPROVED
SR. VICE PRESIDENT OPERATIONS

Revised 1-80

C-3025.1 THIS SIGN SUPERSEDES PLAN № C-3025.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

№ 26



INSTRUCTIONS

SIGNS SHALL BE LOCATED BY THE DIRECTOR SIGNAL ENGINEERING. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"END CTC & BEGIN CTC" SIGNS

CORRECT
ASST VICE PRESIDENT ENGINEERING

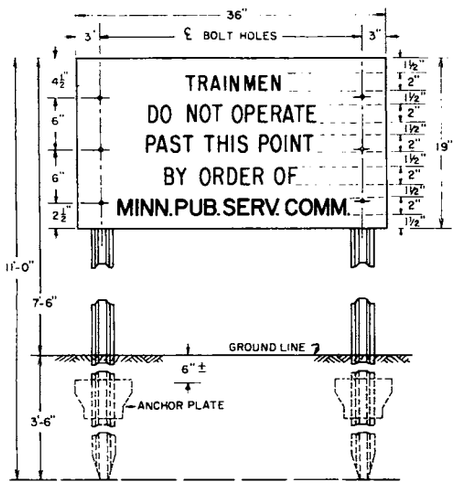
APPROVED
VICE PRESIDENT OPERATIONS

Revised 8-72, 9-76, 10-79

C-3026.3 THIS SIGN SUPERSEDES PLAN № C-3026.2

OFFICE OF ASST VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971

Nº 27



INSTRUCTIONS

THIS SIGN TO BE PLACED AT POINTS ALONG TRACK BEYOND WHICH TRAINMEN ARE NOT TO OPERATE. NO SUCH SIGN SHALL BE PLACED AT ANY POINT ALONG SIDE OR OVER ANY TRACK WITHOUT AUTHORITY OF MINNESOTA PUBLIC SERVICE COMMISSION. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

WARNING SIGN

FOR TRAINMEN

CORRECT — ASST VICE PRESIDENT ENGINEERING

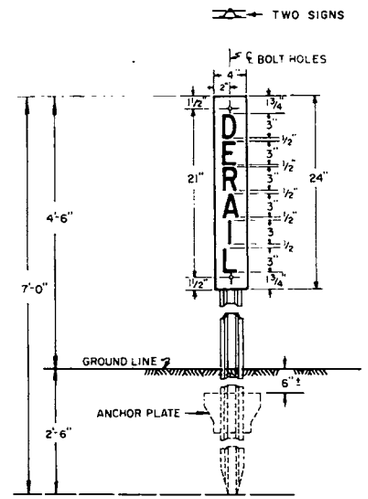
APPROVED — VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3027.2 THIS SIGN SUPERSEDES PLAN Nº C-3027.1

OFFICE OF ASST VICE PRESIDENT ENGR B N INC ST PAUL, MINN APR 971

Nº 28



INSTRUCTIONS

PLACE SIGN OPPOSITE FIRST DERAIL. SIGNS TO BE PLACED ON BOTH SIDES OF POST AT DERAILS WITH A HIGH TARGET STAND. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"DERAIL" SIGN

CORRECT — ASST VICE PRESIDENT ENGINEERING

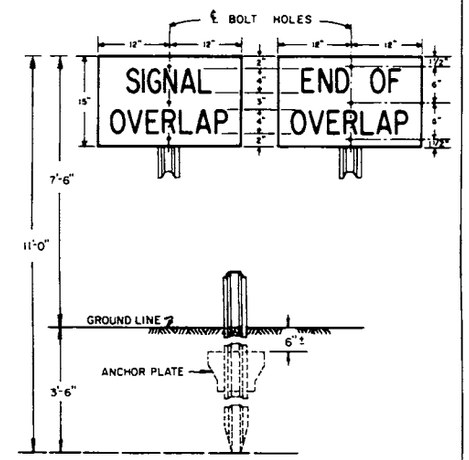
APPROVED — VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3028.2 THIS SIGN SUPERSEDES PLAN Nº C 3028.1

OFFICE OF ASST VICE PRESIDENT ENGR B N INC ST PAUL, MINN MAY 971

Nº 29



INSTRUCTIONS

DIRECTOR OF SIGNAL ENGINEERING SHALL DETERMINE LOCATION OF SIGNS. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"SIGNAL OVERLAP" SIGNS

CORRECT — ASST VICE PRESIDENT ENGINEERING

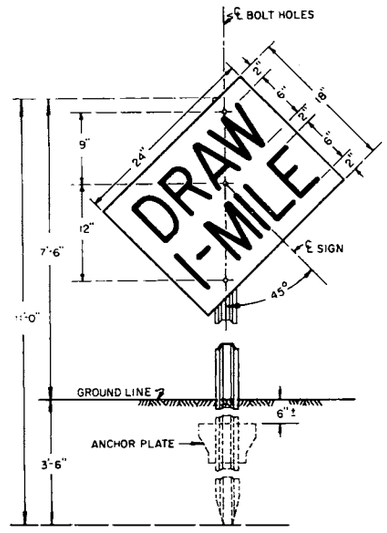
APPROVED — VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3029.2 THIS SIGN SUPERSEDES PLAN Nº C-3029.1

OFFICE OF ASST VICE PRESIDENT ENGR B N INC ST PAUL, MINN JULY 1971

Nº 30



INSTRUCTIONS

PLACE SIGN ONE MILE FROM DRAW SPAN NOT PROTECTED BY INTERLOCKING SIGNALS. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"ONE MILE DRAW SPAN" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

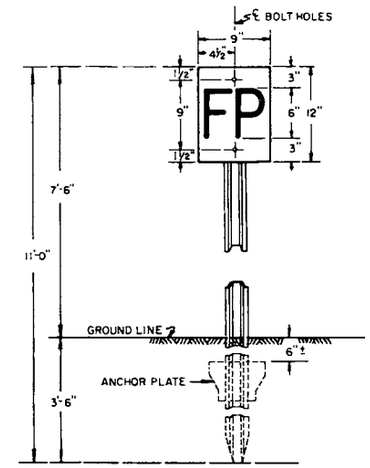
APPROVED
L. B. Thompson
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3030.2 THIS SIGN SUPERSEDES PLAN Nº C-3030.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 1971

Nº 31



INSTRUCTIONS

PLACE SIGN OPPOSITE INSULATED JOINT LOCATED FARTHEST FROM POINT OF SWITCH. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"FOULING POINT" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

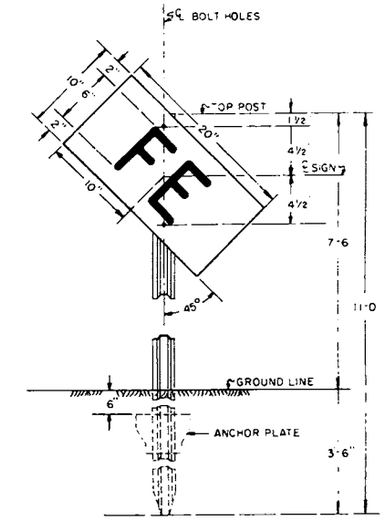
APPROVED
L. B. Thompson
VICE PRESIDENT OPERATIONS

Revised 8-72, 5-75, 10-79

C-3031.3 THIS SIGN SUPERSEDES PLAN Nº C-3031.2

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 1971

Nº 32



INSTRUCTIONS

PLACE SIGN TWO AND ONE HALF MILES FROM HOT BOX DETECTOR LOCATION. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"VERIFICATION POINT" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

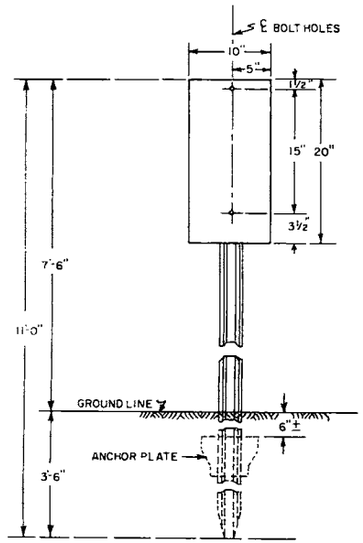
APPROVED
L. B. Thompson
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79

C-3032.2 THIS SIGN SUPERSEDES PLAN Nº C-3032.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. NOV. 1971

Nº 33



INSTRUCTIONS

PLACE SIGN AT POINT SPEED CHANGE SHALL BECOME EFFECTIVE. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"RESUME SPEED" SIGN

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

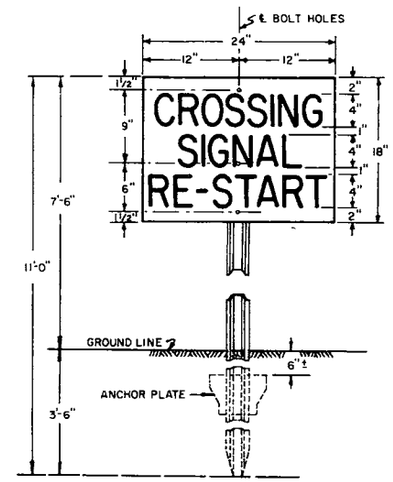
APPROVED
H. B. Thington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3033.1 THIS SIGN SUPERSEDES PLAN Nº C-3032.0

OFFICE OF ASST VICE PRESIDENT ENGR. B. N. INC. ST. PAUL, MINN. JAN. 1974

Nº 34



INSTRUCTIONS

SIGN TO BE USED IN CONJUNCTION WITH HWY. GRADE CROSSING WHERE SPECIAL CONDITIONS EXIST AND ARE APPROVED BY THE ASST. V.P. ENGINEERING. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"CROSSING SIGNAL RE-START" SIGN

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

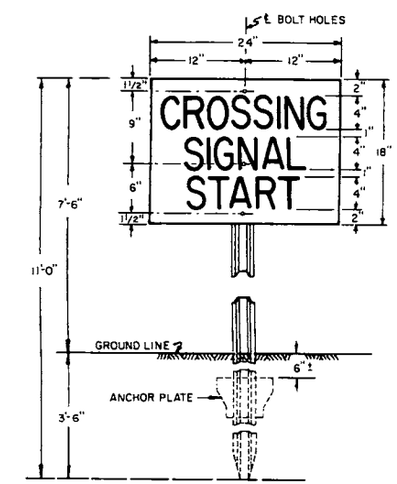
APPROVED
H. B. Thington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3034.1 THIS SIGN SUPERSEDES PLAN Nº C-3034.0

OFFICE OF ASST VICE PRESIDENT ENGR. B. N. INC. ST. PAUL, MINN. SEPT. 1974

Nº 35



INSTRUCTIONS

SIGN TO BE USED IN CONJUNCTION WITH HWY. GRADE CROSSING WHERE SPECIAL CONDITIONS EXIST AND ARE APPROVED BY THE ASST. V.P. ENGINEERING. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"CROSSING SIGNAL START" SIGN

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

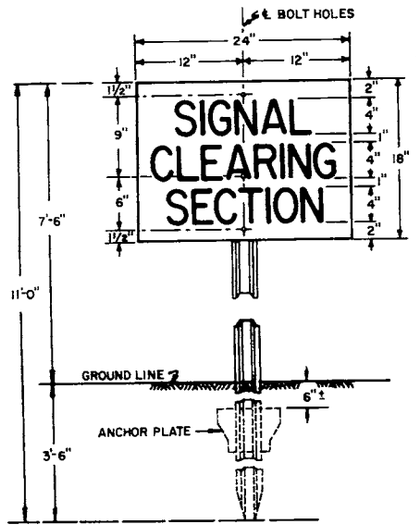
APPROVED
H. B. Thington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3035.1 THIS SIGN SUPERSEDES PLAN Nº C-3035.0

OFFICE OF ASST VICE PRESIDENT ENGR. B. N. INC. ST. PAUL, MINN. SEPT. 1974

Nº 36



INSTRUCTIONS

SIGN TO BE USED IN CONJUNCTION WITH HWY. GRADE CROSSING WHERE SPECIAL CONDITIONS EXIST AND ARE APPROVED BY THE ASST. V.P. ENGINEERING. SEE B. N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"SIGNAL CLEARING SECTION" SIGN

CORRECT
ASST VICE PRESIDENT ENGINEERING

APPROVED
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3036.1 THIS SIGN SUPERSEDES PLAN Nº C-3036.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. SEPT. 1974.

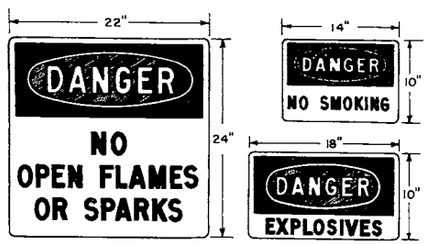
SIGN Nº 37

CANCELLED EFFECTIVE 7-28-81

SIGN Nº 38

CANCELLED EFFECTIVE 7-28-81

№ 41



SPECIFY SIGN WANTED

INSTRUCTIONS

THE WORD "DANGER" SHALL APPEAR IN WHITE LETTERS ON RED INSIDE OF A BLACK RECTANGULAR PANEL. SIGN WORDING SHALL BE BLACK LETTERS ON THE WHITE BACKGROUND.
THIS SIGN SHALL BE MADE IN ACCORDANCE WITH AMERICAN STANDARDS ASSOCIATION SPECIFICATIONS FOR INDUSTRIAL ACCIDENT PREVENTION SIGNS. SIGN WORDING SHALL BE FROM APPROVED LIST SHOWN ON B.N. INC. STANDARD SIGN NO. 42. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.
THIS SIGN SHALL BE USED ONLY WHERE AN IMMEDIATE HAZARD EXISTS

HAZARD SIGNS

CORRECT — ASST VICE PRESIDENT ENGINEERING
APPROVED — VICE PRESIDENT OPERATIONS

Revised 10-79

C-3041.1 THIS SIGN SUPERSEDES PLAN № C-3041.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. APR 19

№ 42

Approved list of Sign Wordings
for
B.N. INC. Sign NO. 41

ACETYLENE
ACID
CAUSTIC
CHLORINE
CYANIDE
EXPLOSIVE GAS
EXPLOSIVES
EXPLOSIVES MAGAZINE
GAS
GASOLINE
HIGH VOLTAGE
FLAMMABLE LIQUIDS
FLAMMABLE MATERIAL
NO ADMITTANCE
NO SMOKING
NO TRESPASSING
NO OPEN FLAME OR SPARKS

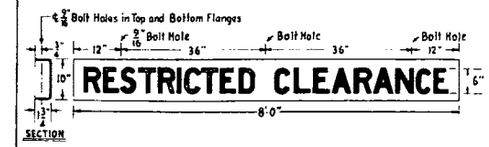
"APPROVED LIST"

CORRECT — ASST VICE PRESIDENT ENGINEERING
APPROVED — VICE PRESIDENT OPERATIONS

C-3042.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. APR 19

№ 43



INSTRUCTIONS

CAUTION — WHEN PLACING SIGN IN VACUUM APPLICATOR BE SURE TO PLACE A WOODEN FILLER IN CHANNEL TO PREVENT ITS COLLAPSE WHEN VACUUM IS APPLIED DURING APPLICATION OF LEGEND.
"RESTRICTED CLEARANCE" SIGNS SHALL BE PLACED ON RAILROAD STRUCTURES OVER PUBLIC ROADS WHERE REQUIRED BY STATE LAW OR DEEMED DESIRABLE BY THE RAILROAD COMPANY. THE SIGNS SHALL BE FASTENED TO BOTH SIDES OF THE STRUCTURE ABOVE APPROACH TRAFFIC LANES IN SUCH A MANNER AS NOT TO DECREASE THE VERTICAL CLEARANCE UNDER THE STRUCTURE, AND IN SUCH POSITION THAT THEY ARE CLEARLY VISIBLE TO TRAFFIC ON HIGHWAY, EXCEPT THAT SIGN SHALL NOT BE PLACED ON GRADE SEPARATION BRIDGES THAT ALREADY HAVE A DEFINITE CLEARANCE SHOWN THEREON BY ORDER OR DIRECTION OF PUBLIC AUTHORITIES. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

SEE DIRECTOR BRIDGE ENGINEERING PLAN NO. B115-6546-2 FOR METHOD OF ATTACHING THE SIGNS TO THE BRIDGE.

RESTRICTED CLEARANCE SIGN

ON RAILWAY BRIDGES OVER HIGHWAYS

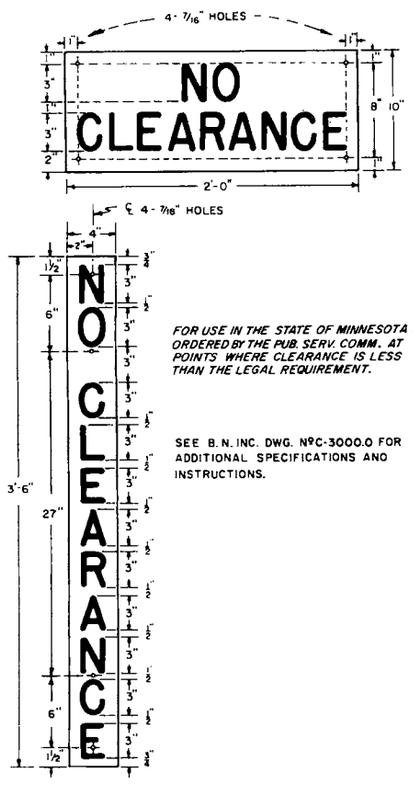
CORRECT — ASST VICE PRESIDENT ENGINEERING
APPROVED — VICE PRESIDENT OPERATIONS

Revised 10-79

C-3043.1 THIS SIGN SUPERSEDES PLAN № C-3043.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. APR 19

№ 44



FOR USE IN THE STATE OF MINNESOTA AS ORDERED BY THE PUB. SERV. COMM. AT POINTS WHERE CLEARANCE IS LESS THAN THE LEGAL REQUIREMENT.

SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

CORRECT — ASST VICE PRESIDENT ENGINEERING

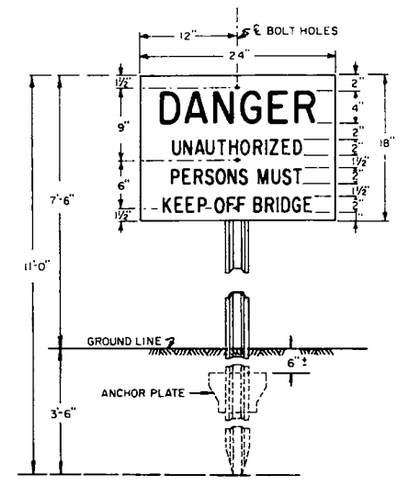
APPROVED — VICE PRESIDENT OPERATIONS

Revised 10-79

C-3044.1 THIS SIGN SUPERSEDES PLAN Nº C-3044.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC ST PAUL, MINN MAY 1971

№ 45



INSTRUCTIONS

THIS SIGN IS TO BE PLACED AT POINTS WHERE THE PUBLIC IS MAKING UNAUTHORIZED USE OF THE B.N. INC. PROPERTY. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"DANGER" SIGN

CORRECT — ASST VICE PRESIDENT ENGINEERING

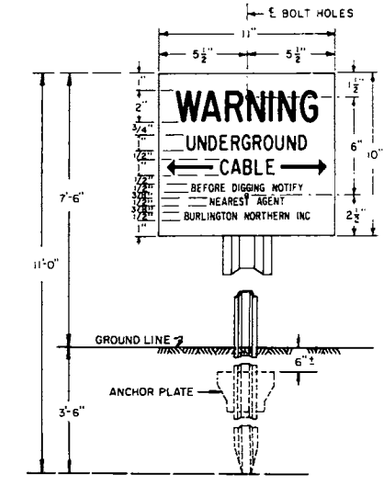
APPROVED — VICE PRESIDENT OPERATIONS

Revised 10-79

C-3045.1 THIS SIGN SUPERSEDES PLAN Nº C-3045.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC ST PAUL, MINN MAR 1975

№ 46



INSTRUCTIONS

PLACE SIGN PARALLEL TO UNDERGROUND CABLE SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"WARNING UNDERGROUND CABLE" SIGN

CORRECT — ASST VICE PRESIDENT ENGINEERING

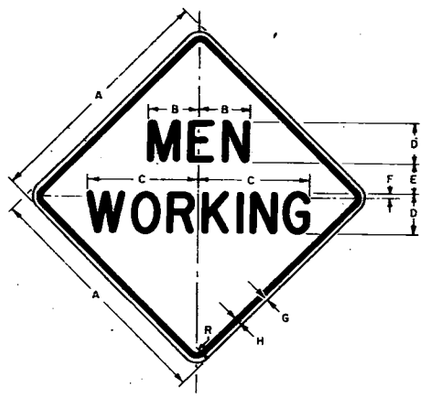
APPROVED — VICE PRESIDENT OPERATIONS

Revised 10-79

C-3046.1 THIS SIGN SUPERSEDES PLAN Nº C-3046.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC ST PAUL, MINN OCT 1976

№ 47



COLOR CODE		DIMENSIONS IN INCHES								
ORANGE	YELLOW	A	B	C	D	E	F	G	H	R
30R	30Y	30	6 3/16	13 9/16	5D	3 3/4	5/8	1/2	3/4	1 7/8
48R	48Y	48	9 7/8	21 5/8	8D	6	1	3/4	1 1/4	3

SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"MEN WORKING" SIGN

CORRECT
B. K. Anderson
ASST VICE PRESIDENT ENGINEERING

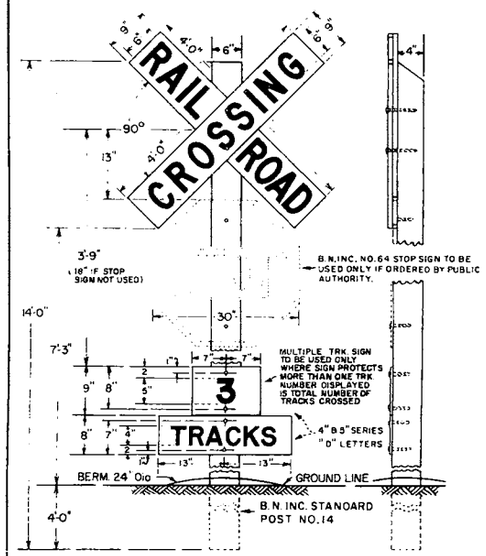
APPROVED
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3047.1 THIS SIGN SUPERSEDES PLAN № C-3047.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST PAUL, MINN. APR. 1978

Nº 61



INSTRUCTIONS

PLACE SIGN TO RIGHT OF HIGHWAY AT A MINIMUM DISTANCE OF 6 FEET FROM EDGE OF PAVEMENT OR SURFACED ROADWAY AND A MINIMUM OF 15 FEET FROM THE CENTERLINE OF THE NEAREST TRACK TWO SIGNS REQUIRED AT EACH CROSSING. DISTANCE SEPARATING TRACKS BEFORE AN ADDITIONAL SIGN IS REQUIRED SHALL BE ASSUMED AS 100 FEET UNLESS LOCAL CONDITIONS REQUIRE OTHERWISE. SEE B.N.INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

HIGHWAY CROSSING SIGN

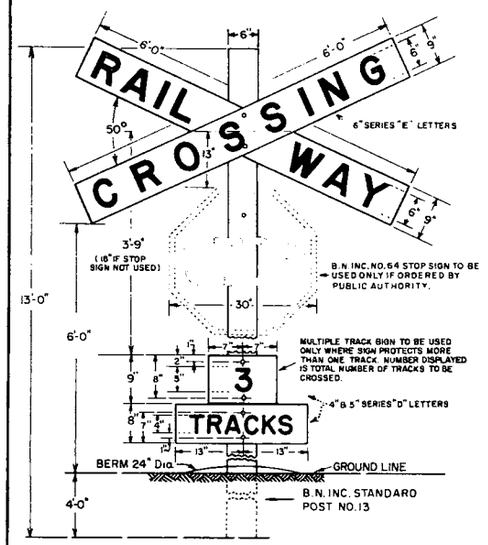
CORRECT
ASST VICE PRESIDENT ENGINEERING
Revised 8-72, 1-75, 8-75, 10-77, 10-79

APPROVED
VICE PRESIDENT OPERATIONS

C-3061.5 | THIS SIGN SUPERSEDES PLAN Nº C-3061.4

OFFICE OF ASST VICE PRESIDENT ENGR B.N.INC. ST PAUL, MINN APR 1971

Nº 62



INSTRUCTIONS

PLACE SIGN TO RIGHT OF HIGHWAY AT A MINIMUM DISTANCE OF 6 FEET FROM EDGE OF PAVEMENT OR SURFACED ROADWAY AND A MINIMUM OF 15 FEET FROM THE CENTERLINE OF THE NEAREST TRACK TWO SIGNS REQUIRED AT EACH CROSSING. DISTANCE SEPARATING TRACKS BEFORE AN ADDITIONAL SIGN IS REQUIRED SHALL BE ASSUMED AS 100 FEET UNLESS LOCAL CONDITIONS REQUIRE OTHERWISE. SEE B.N.INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

HIGHWAY CROSSING SIGN FOR CANADA

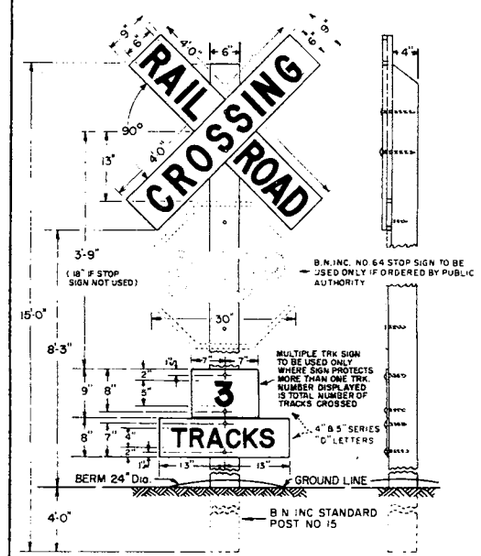
CORRECT
ASST VICE PRESIDENT ENGINEERING
Revised 8-72, 1-75, 8-75, 10-77, 10-79

APPROVED
VICE PRESIDENT OPERATIONS

C-3062.5 | THIS SIGN SUPERSEDES PLAN Nº C-3062.4

OFFICE OF ASST VICE PRESIDENT ENGR B.N.INC. ST PAUL, MINN APR 1971

Nº 63



INSTRUCTIONS

PLACE SIGN TO RIGHT OF HIGHWAY AT A MINIMUM DISTANCE OF 6 FEET FROM EDGE OF PAVEMENT OR SURFACED ROADWAY AND A MINIMUM OF 15 FEET FROM THE CENTERLINE OF THE NEAREST TRACK TWO SIGNS REQUIRED AT EACH CROSSING. DISTANCE SEPARATING TRACKS BEFORE AN ADDITIONAL SIGN IS REQUIRED SHALL BE ASSUMED AS 100 FEET UNLESS LOCAL CONDITIONS REQUIRE OTHERWISE. SEE B.N.INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

HIGHWAY CROSSING SIGN

(WISCONSIN)

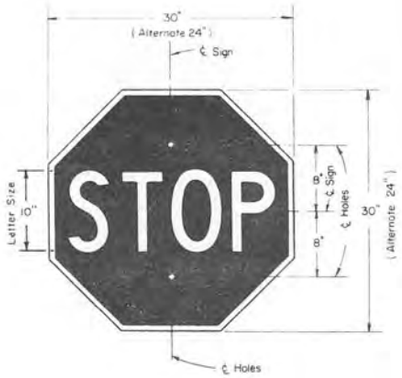
CORRECT
ASST VICE PRESIDENT ENGINEERING
Revised 8-72, 1-75, 8-75, 10-77, 10-79

APPROVED
VICE PRESIDENT OPERATIONS

C-3063.5 | THIS SIGN SUPERSEDES PLAN Nº C-3063.4

OFFICE OF ASST VICE PRESIDENT ENGR B.N.INC. ST PAUL, MINN APR 1971

Nº 64



INSTRUCTIONS

FOR USE WITH HIGHWAY CROSSING SIGNS B.N. INC. NO. 61, 62, AND NO. 63 WHEN DESIGNATED AS A STOP CROSSING BY COMPETENT PUBLIC AUTHORITY. STOP SIGN IN RURAL DISTRICTS SHALL BE 30" x 30" IN RESIDENTIAL OR BUSINESS DISTRICTS WHERE SPEEDS ARE LOW, TRAFFIC IS LIGHT OR MOUNTING SPACE IS LIMITED, SIGN MAY BE 24" x 24" AS AN ALTERNATE.

ORDERS FOR THIS SIGN MUST SPECIFY 24" OR 30" SIZE.

THIS SIGN TO BE USED ONLY IN STATES AND PROVINCES WHERE LAW REQUIRES USE OF RED STOP SIGNS. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

STOP SIGN

CORRECT
B.H. Anderson
ASST. VICE PRESIDENT ENGINEERING

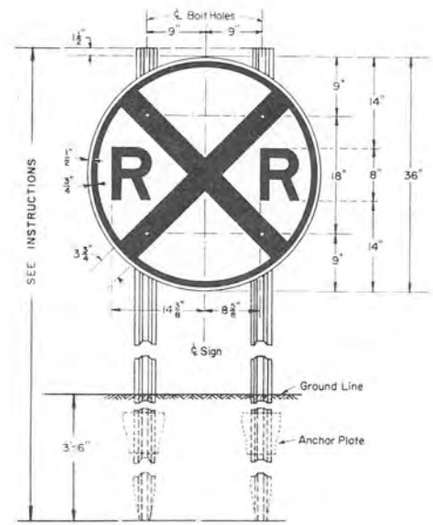
APPROVED
S.E. Thington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3064.1 THIS SIGN SUPERSEDES PLAN Nº C-3064.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 97

Nº 65



INSTRUCTIONS

B.N. INC. STANDARD SIGN POST NO. 2 (13'-0" LONG) SHALL BE USED IN BUSINESS, RESIDENTIAL AND ANY OTHER AREAS WHERE AN OBSTRUCTION TO VIEW IS LIKELY TO OCCUR. B.N. INC. STANDARD POST NO. 1 (11'-0" LONG) SHALL BE USED IN RURAL AND ANY OTHER AREAS WHERE THE VIEW OF THE SIGN IS NOT OBSTRUCTED.
WHEN B.N. INC. IS REQUIRED TO FURNISH THIS SIGN, IT IS TO BE ERECTED AND THEREAFTER MAINTAINED BY PUBLIC AUTHORITIES HAVING SUPERVISION OVER THE HIGHWAY WHERE USED. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"HIGHWAY CROSSING ADVANCE WARNING" SIGN

CORRECT
B.H. Anderson
ASST. VICE PRESIDENT ENGINEERING

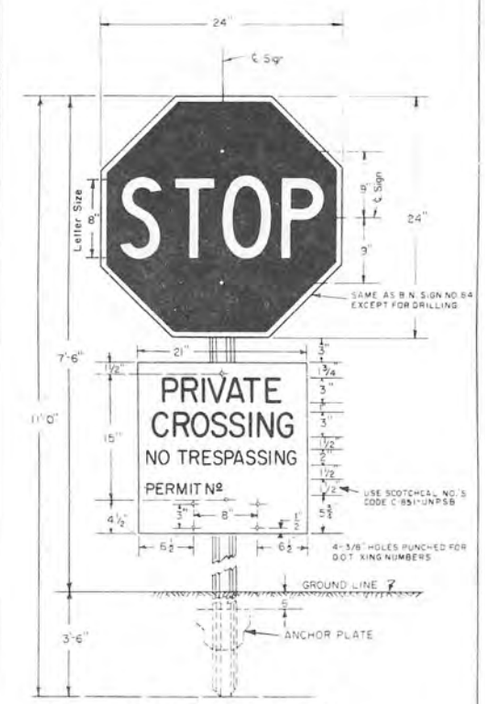
APPROVED
S.E. Thington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3065.1 THIS SIGN SUPERSEDES PLAN Nº C-3065.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 97

Nº 66



INSTRUCTIONS

SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

PRIVATE CROSSING SIGN

CORRECT
B.H. Anderson
ASST. VICE PRESIDENT ENGINEERING

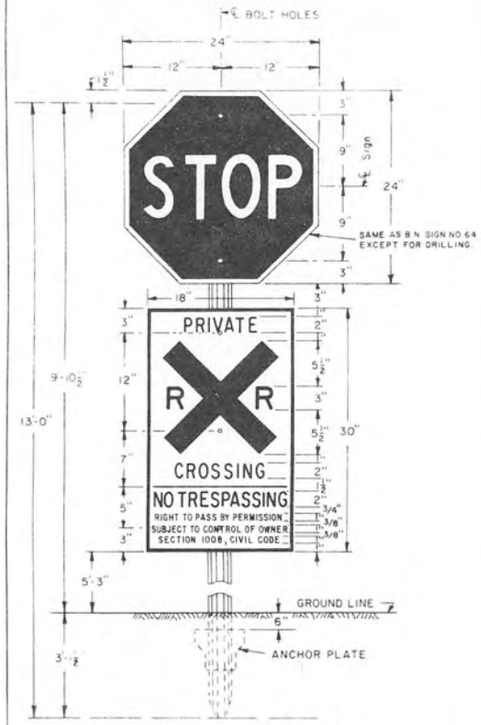
APPROVED
S.E. Thington
VICE PRESIDENT OPERATIONS

Revised 2-76, 10-79

C-3066.2 THIS SIGN SUPERSEDES PLAN NO. C-3066.1

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 1973

Nº 67



INSTRUCTIONS

PLACE SIGN TO RIGHT OF ROADWAY AT A MINIMUM DISTANCE OF 6FT. FROM EDGE OF ROADWAY AND A MINIMUM OF 15 FT. FROM THE CENTER-LINE OF THE NEAREST TRACK. TWO SIGNS REQUIRED AT EACH CROSSING. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

PRIVATE CROSSING SIGN
FOR CALIFORNIA

CORRECT
B. B. Anderson
ASST. VICE PRESIDENT ENGINEERING

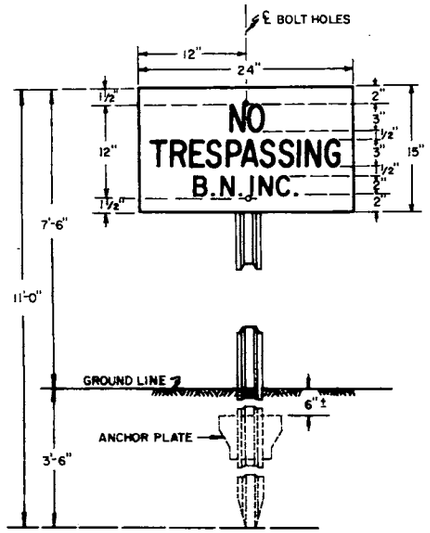
APPROVED
J. H. Heston
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3067 I | THIS SIGN SUPERSEDES PLAN Nº C-3067.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. NOV. 1970

№ 81



INSTRUCTIONS

THIS SIGN IS TO BE PLACED AT POINTS WHERE THE PUBLIC IS MAKING UNAUTHORIZED USE OF THE B. N. INC. PROPERTY. SEE B. N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"NO TRESPASSING" SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

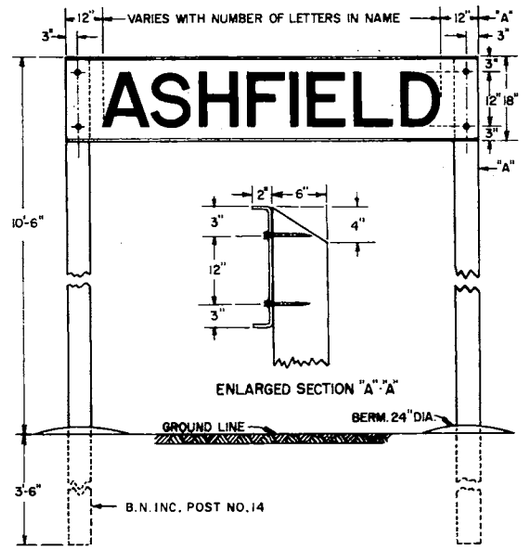
APPROVED
S. B. Shington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3081.1 THIS SIGN SUPERSEDES PLAN № C-3081.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. 1971.

№ 82



INSTRUCTIONS

LENGTH OF SIGN IS GOVERNED BY NUMBER OF LETTERS IN NAME, NO SIGN TO BE LESS THAN 6 FT. LONG. BEND EDGES TO FORM CHANNEL WITH AN 18" FACE AS SHOWN. APPLY STATION NAME TO BOTH SIDES OF SIGN WHEN USED WITH POSTS, AND ON CHANNELED SIDE ONLY WHEN ATTACHED TO A BUILDING *(SPECIFY)*.

PLACE SIGN NEAR PLATFORM OR NEAR THE CENTER OF THE SIDING AT RIGHT ANGLES TO THE MAIN TRACK IN PLAIN VIEW FROM APPROCHING TRAINS, THE NEAREST PART OF THE SIGN TO BE AT LEAST 14' FROM THE CENTER LINE OF MAIN TRACK. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

STATION SIGN

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

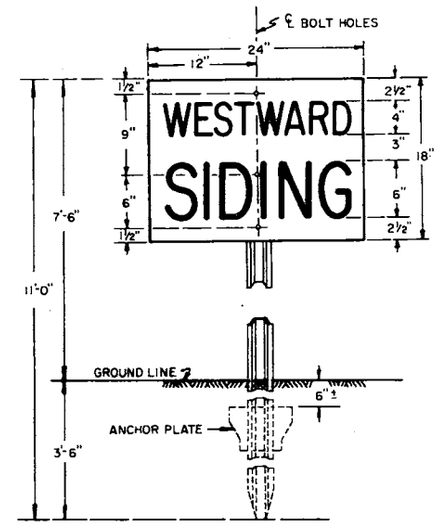
APPROVED
S. B. Shington
VICE PRESIDENT OPERATIONS

Revised 8-72, 10-79, 10-81

C-3082.3 THIS SIGN SUPERSEDES PLAN № C-3082.2

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY 1971

№ 83



INSTRUCTIONS

PLACE SIGN AT LOCATIONS SPECIFIED BY DIVISION SUPERINTENDENT. SEE B. N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"WESTWARD SIDING" OR
"EASTWARD SIDING" SIGNS

CORRECT
B. H. Anderson
ASST. VICE PRESIDENT ENGINEERING

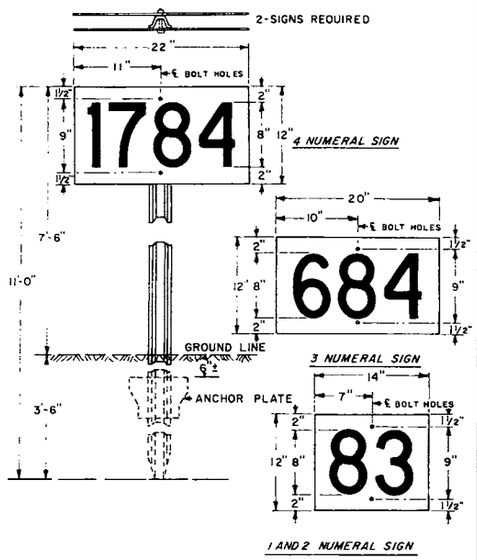
APPROVED
S. B. Shington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3083.1 THIS SIGN SUPERSEDES PLAN № C-3083.0

OFFICE OF ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. MAY, 1971.

№ 101



INSTRUCTIONS

PLACE SIGN AT LOCATIONS SPECIFIED BY DIVISION ENGINEER. SEE B.N. INC DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"MILE POST" SIGN

CORRECT
ASST VICE PRESIDENT ENGINEERING

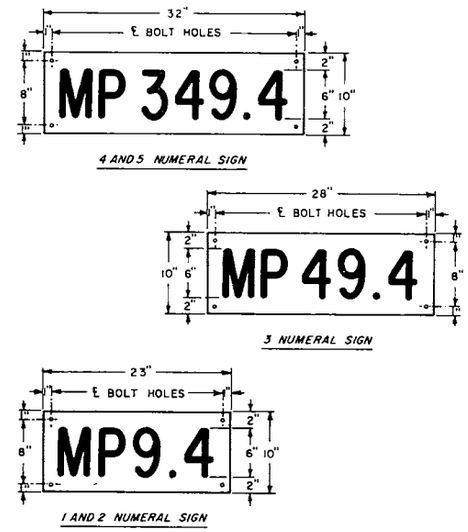
APPROVED
VICE PRESIDENT OPERATIONS

Revised 4-76, 10-79

C-3101.2 THIS SIGN SUPERSEDES PLAN № C-3101.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC ST PAUL, MINN APR 1971

№ 102



INSTRUCTIONS

FASTEN SIGN TO SIDE OF CTC BUNGALOW AT LOCATIONS SPECIFIED BY DIVISION SUPERINTENDENT. TWO SIGNS PER BUNGALOW. SEE B.N. INC. DWG. № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"MILEPOST FOR END OF MULTIPLE TRACK IN CTC TERRITORY" SIGN

CORRECT
ASST VICE PRESIDENT ENGINEERING

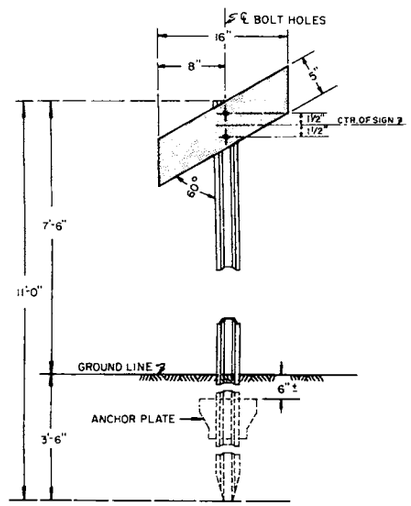
APPROVED
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3102.1 THIS SIGN SUPERSEDES PLAN № C-3102.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC ST PAUL, MINN SEPT 1976

Nº 121



INSTRUCTIONS

PLACE SIGN ABOUT 150 FEET EACH SIDE OF OBSTRUCTION IN TRACK WHICH INTERFERES WITH USE OF SNOW FLANGERS. IN NO CASE SHALL SIGNS BE PLACED BETWEEN TRACKS, NOR SHALL THEY BE PLACED WITHIN LIMITS OF OUTLYING SWITCHES OF STATION GROUNDS. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"FLANGER" SIGN

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

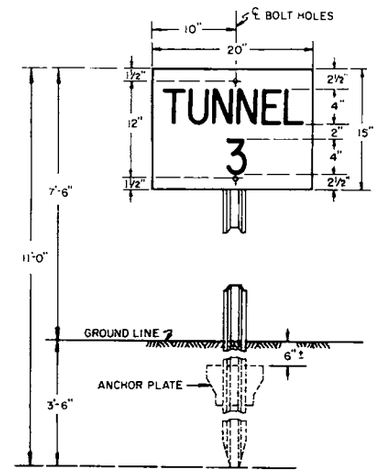
APPROVED
E. B. Thrington
VICE PRESIDENT OPERATIONS

Revised 10-76, 10-79

C-3121.2 THIS SIGN SUPERSEDES PLAN Nº C-3121.1

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. APR. 97

Nº 122



INSTRUCTIONS

PLACE SIGN 800 FT. IN ADVANCE OF TUNNEL PORTAL. SEE B.N. INC. DWG. Nº C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"TUNNEL" SIGN

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

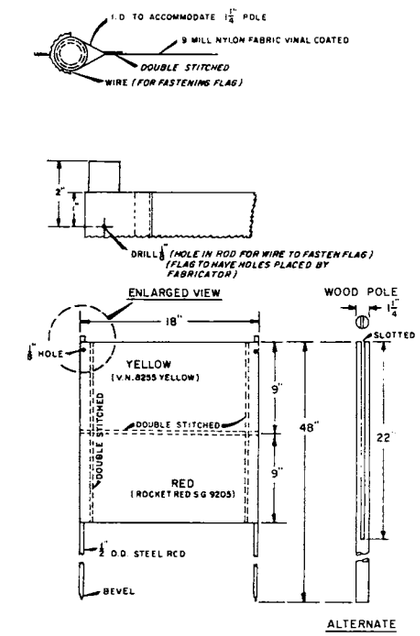
APPROVED
E. B. Thrington
VICE PRESIDENT OPERATIONS

Revised 10-79

C-3122.1 THIS SIGN SUPERSEDES PLAN Nº 3122.0

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. APR. 97

Nº 123



MAINTENANCE OF WAY FLAG AND STAFF

ALSO FURNISHED IN THE FOLLOWING COLORS AS SPECIFIED

Rocket Red	S.G. 9205
Signal Green	S.G. 9205
Yellow	V.N. 8255

CORRECT
B. H. Anderson
ASST VICE PRESIDENT ENGINEERING

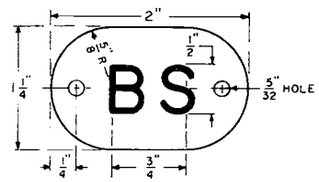
APPROVED
E. B. Thrington
VICE PRESIDENT OPERATIONS

Revised 9-73, 2-75, 12-76, 10-79

C-3123.4 THIS SIGN SUPERSEDES PLAN Nº C-3123.3

OFFICE OF ASST VICE PRESIDENT ENGR B.N. INC. ST. PAUL, MINN. JULY 97

№ 124



TAG TO BE STAMPED

BS - BEGINNING SPIRAL
BC - BEGINNING MAIN CURVE
EC - ENDING MAIN CURVE
ES - END OF SPIRAL
CC - POINT OF COMPOUND CURVATURE

INSTRUCTIONS

THE APPROPRIATE DIES WILL BE USED TO STAMP THE LETTERS "BS", "BC", "EC", "ES" OR "CC" ON THE TOP SIDE OF TAG. PLACE TAGS ON THE OUTER SIDE OF THE LOW RAIL ON TOP OF TIE AND ON THE TIE NEAREST TO THE POINT OF CURVE AND SPIRAL, AS MEASURED ALONG THE CENTER LINE OF TRACK. FASTEN TO TIE WITH TWO № 9 GAUGE x 2" LONG GALVANIZED BARBED ROOFING NAILS. SEE B.N. INC. DWG № C-3000.0 FOR ADDITIONAL SPECIFICATIONS AND INSTRUCTIONS.

"CURVE TAG"

CORRECT
ASST. VICE PRESIDENT ENGINEERING

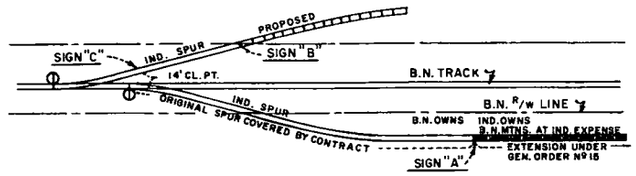
APPROVED
VICE PRESIDENT OPERATIONS

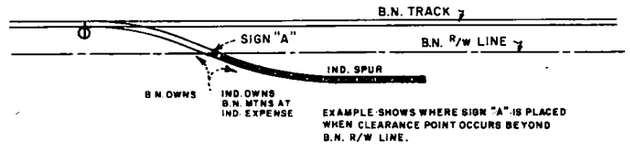
Revised 4-75, 10-79

C-3124.2 THIS SIGN SUPERSEDES PLAN № C-3124.1

[illegible] ASST. VICE PRESIDENT ENGR. B.N. INC. ST. PAUL, MINN. APR. [illegible]

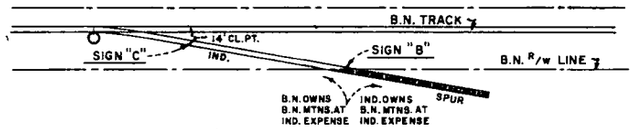
SIGN "A"





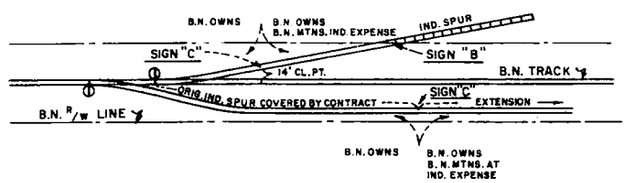
SIGN "A" SHALL BE LOCATED AT THE END OF THE ORIGINAL SPUR OR POINT AS COVERED BY ORIGINAL CONTRACT PROVIDING SAID POINT OCCURS BEYOND B.N. RIGHT OF WAY LINE. SIGN SHALL BE USED WHEN CLEARANCE POINT OCCURS BEYOND RIGHT OF WAY LINE AS ILLUSTRATED ABOVE.

SIGN "B"



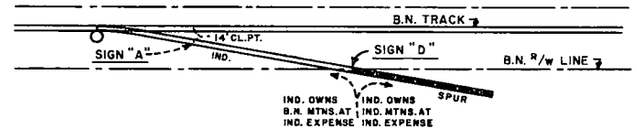
SIGN "B" SHALL BE LOCATED AT A POINT WHERE THE CENTER LINE OF THE INDUSTRY SPUR TRACK INTERSECTS THE B.N R/W LINE AS ILLUSTRATED ABOVE.

SIGN "C"

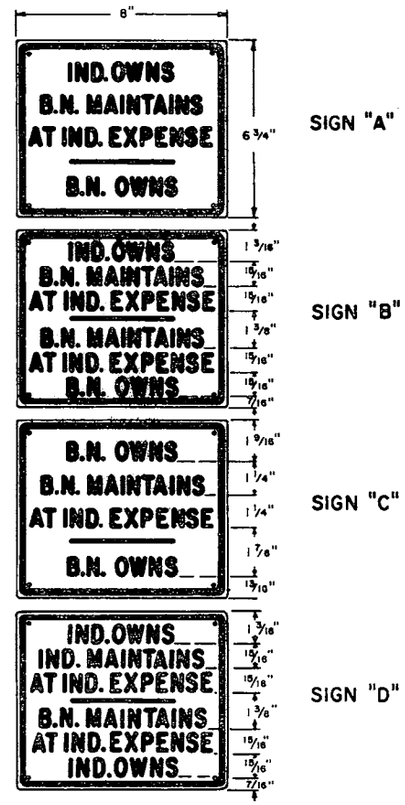


SIGN "C" SHALL BE LOCATED AT THE END OF THE ORIGINAL SPUR OR POINT COVERED BY ORIGINAL CONTRACT PROVIDING SAID POINT OCCURS WITHIN B.N. RIGHT OF WAY LINE. ALSO SIGN "C" SHALL BE LOCATED AT THE 14'-0" CLEARANCE POINT MEASURED AT RIGHT ANGLES TO PARENT TRACK AS ILLUSTRATED ABOVE.

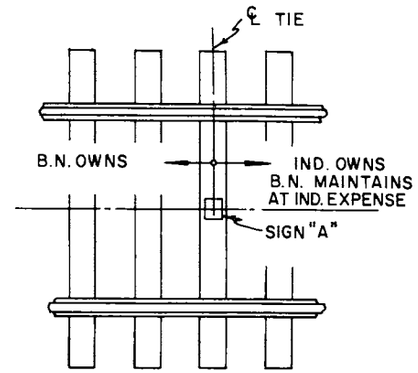
SIGN "D"



SIGN "D" SHALL BE LOCATED AT A POINT WHERE THE CENTER LINE OF THE INDUSTRY SPUR TRACK INTERSECTS THE B.N. R/W LINE AS ILLUSTRATED ABOVE.



NOTE:
SIGNS A, B, C & D SHALL BE PLACED AS ILLUSTRATED ABOVE.



SPECIFICATIONS

SIGNS "A" "B" "C" & "D" TO BE STAMPED FROM 16 GAGE ALUMINUM PLATE 6 3/4" x 8" FINISHED SIZE. PLATE TO HAVE RIB STAMPED AROUND OUTSIDE EDGE 5/32" HOLES TO BE PUNCHED IN EACH CORNER. CORNERS TO BE ROUNDED OFF.
4-10 GAUGE 2 1/2" LONG ALUMINUM BARBED NAILS WITH NEOPRENE WASHERS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

DIVISION OF OWNERSHIP AND MAINTENANCE SIGN

ENGINEERING DIVISION, ST. PAUL, MINN. APR. 1976

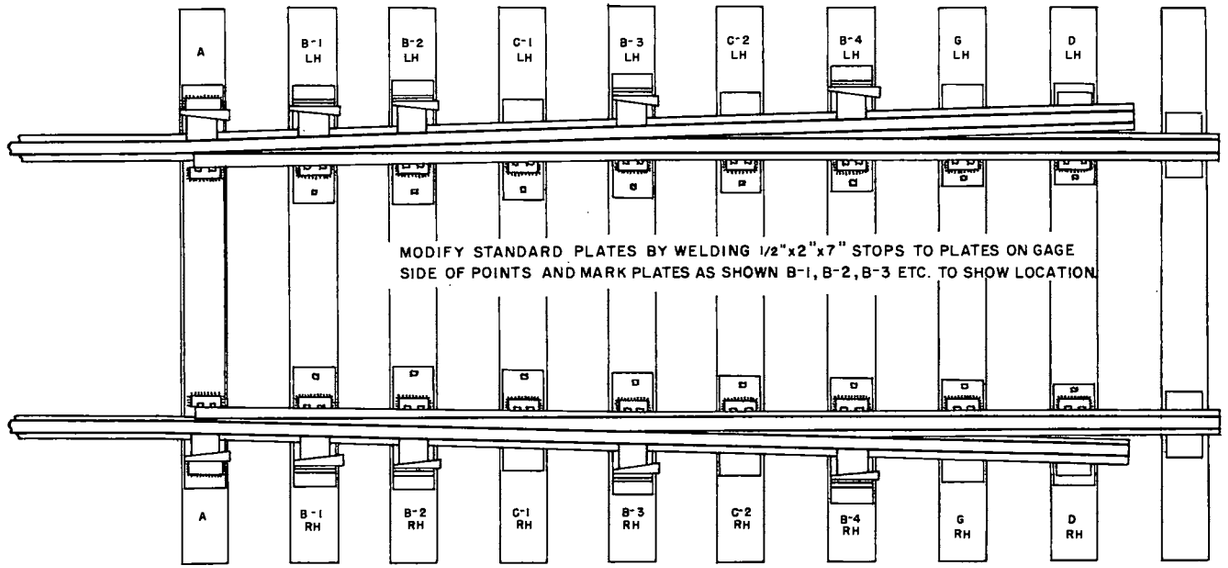
Recommended: B. H. Anderson — Asst. Vice President Engineering

Approved: J. A. Hartley — Vice President Operations

Revised 3-78

THIS PLAN SUPERSEDES PLAN NO. C-3125.0

Dwg. Nº C-3125.1



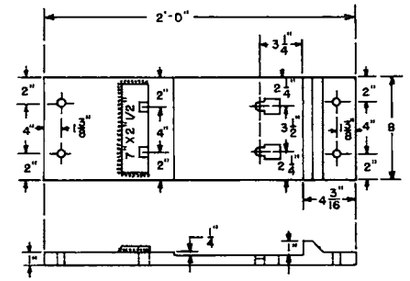


PLATE "B"

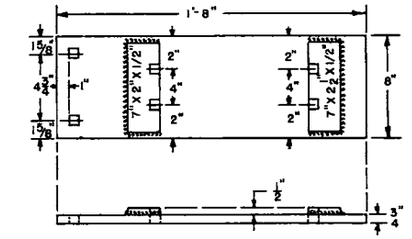


PLATE "D"

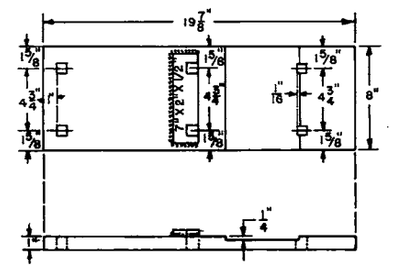


PLATE "C"

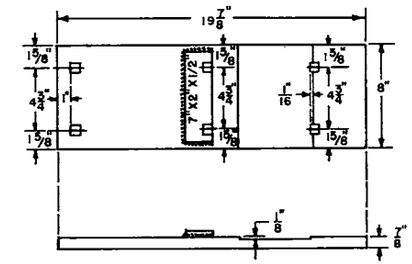
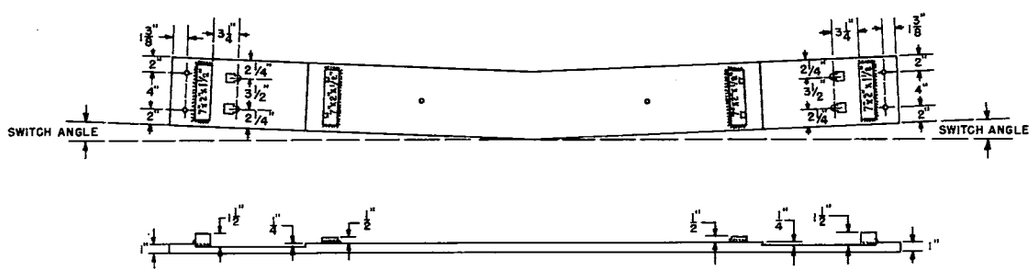


PLATE "G"

NOTE:

FOR TWO RAIL EXPANSION JOINT USE SPECIAL GAGE PLATE AS SHOWN BELOW. FOR SINGLE RAIL EXPANSION JOINT USE STANDARD LH OR R.H. GAGE PLATE WITH A STOP WELDED TO THE PLATE ON GAGE SIDE OF SWITCH POINT. MODIFY L.H. OR R.H. AND PLATES B, C, D, G. PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT 13/16" DIA. HOLES FOR DRIVE SCREW SPIKES.



SPECIAL GAGE PLATE

NOTE:

SWITCH POINT PLATES ETC. MUST BE COMPATIBLE WITH THE RAIL AND SWITCHES IN THE TERRITORY WHERE THE JOINT IS TO BE PLACED. ORDER MUST STATE STANDARD PLAN NUMBER AND IF THE JOINT IS TO BE FOR RIGHT HAND, LEFT HAND OR TWO RAIL APPLICATION.

USE 9'-0" TIES WITH ALL GAGE AND SLIDE PLATES.

BURLINGTON NORTHERN INC.
SPECIAL PLAN

TYPICAL STANDARD SWITCH POINT CONVERTED TO EXPANSION JOINT

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1973

Recommended: R. G. Anderson — Asst. Vice President Engineering

Approved: S. B. Pringle — Vice President, Operations

NOT TO BE USED ON MAIN LINES

Revised 10-80
THIS PLAN SUPERSEDES PLAN NO. C-6019.0

Dwg. Nº C-6019.1

TRACK TOOLS
B.N. INC.

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BN SPECIFICATIONS AND PLANS FOR TRACK TOOLS

(Adopted From

AMERICAN RAILWAY ENGINEERING ASSOCIATION

Engineering Division, AAR, PART 6)

General

1.0 Workmanship

1.1 The steel used in the manufacture of all tools shall be free from pipe, porous centers, gross non-metallic inclusions or any other defects.

1.2 All tools shall be made in a workmanlike manner and shall be free from cracks, seams, laps and other injurious discontinuities.

1.3 Eyes of tools with handle holes must be on center and in true alignment.

2.0 Finish

2.1 Percussion Tools

The body of the tools shall be unpainted. Ground working surfaces can be coated with a transparent lacquer type rust preventative.

2.2 Non-Percussion Tools

The body of the tool shall be coated with paint, oil or varnish to prevent corrosion, and each polished cutting edge shall be oiled or coated with a clear lacquer.

3.0 Marking

Each tool shall be legibly marked with the manufacturer's name or trademark, coded as to production lot and the purchaser's initials. This identification shall be located in a position which will not interfere with the quality or performance of the tool and will not be removed by subsequent redressing.

4.0 Inspection

4.1 The inspector representing the purchaser shall have free entry, at all times while the work on the contract of the purchases is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector free of charge, all reasonable facilities and necessary assistance to satisfy him that the material is being furnished in accordance with these specifications. Tests and inspections shall be made prior to shipment at the place of manufacture unless otherwise specified.

4.2 The purchaser may make tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests shall be made at the expense of the purchaser.

4.3 Rejection - Material represented by samples which fail to conform to the requirements of these specifications will be rejected.

4.4 Material which, subsequent to test and inspection at the manufacturer's plant or elsewhere, and the acceptance shows injurious defects will be rejected and the manufacturer shall be notified.

5.0 Shipment or Delivery

Tools shall be properly packed for shipment to avoid damage. All bundles and boxes shall be plainly marked with the name of the purchaser, purchaser's order number, the name of the manufacturer, and the point of shipment.

6.0 Warranty

The manufacturer shall warrant that all tools are free from defects in material workmanship and heat treatment, that the tools meet all requirements of this specification, and that any defective tools will be replaced free of cost to the purchaser. Certified test reports may be requested at the purchaser's option.

Percussion Tools

7.0 Scope

7.1 This section of specification covers the contouring and metallurgical requirements for the manufacturing, ordering, inspection and acceptance of the following percussion tools.

7.1.1 Metal to Metal Contact Striking Tools

Double-faced sledge hammers (Plan No. C-1967.2), Spike Maul (Plan No. C-1961.2)

7.1.2 Metal to Metal Contact Struck Tools

Track Chisels (Plan No. C-1957.1), Nut Splitter (Plan No. 1971.0), Round Track Punch (Plan No. C-1977.0), Track Spike Lifter (Plan No. C-1974.0)

8.0 Manufacture

8.1 Process - The shock resisting steel shall be made from electric furnace, vacuum degassed carbon deoxidized special quality fine grain size alloy bar.

8.2 Heat Treatment

8.2.1 Each tool classified in 7.1.1 and 7.1.2 shall be hardened by liquid quenching and subsequent tempering in such a manner that the hardness range specified in 8.3.2 will be maintained throughout the entire section normally removed by redressing and/or to a sufficient depth to absorb the normal working stresses. This heat treatment shall be such that a fracture test of the tool will exhibit a silky, find grained appearance according to Shephard Standard No. 6 or finer.

8.2.2 All tools to be redressed without subsequent heat treatment shall be initially heat treated so that the hardness specified in 8.3.2 is maintained to a depth from the end not less than the average cross sectional thickness up to a maximum of one inch. All tools made of Grade A steel shall not be redressed without subsequent heat treatment. All tools with Grade B steel to be redressed without subsequent heat treatment.

8.3 Chemical and Hardness Requirements

8.3.1 All striking and struck tools (7.1.1 and 7.1.2) shall be made of shock resisting steel of Grade A or Grade B chemical composition with standard AISI residuals.

Gra	Carbon		Manganese		Phos	Sulfur	Silicon		Vanadium		Molybdenum	
	Min	Max	Min	Max	Max	Max	Min	Max	Min	Max	Min	Max
A	.51	.60	.75	1.00	.025	.025	1.80	2.20				
B	.51	.60	.75	1.00	.025	.025	1.80	2.20		.45	.35	.50

8.3.2 Hardness - All hardness tests shall be performed according to ASTM Spec. E-18. Frequency of testing should be performed according to the requirements in MIL-STD-105D, "Military Standard - Sampling Procedure and Tables for Inspection by Attributes."

8.3.2.1 All struck surfaces shall be 44/48 Rockwell "C" hardness.

8.3.2.2 All stricking surfaces shall be 51/55 Rockwell "C" hardness.

8.3.2.3 All cutting surfaces shall be 56/60 Rockwell "C" hardness.

8.3.2.4 All punch ends shall be 52/56 Rockwell "C" hardness.

8.4 Hardenability

8.4.1 Grade A Steel - Composition of the steel shall be such that in the standard Jominy test the hardness is greater than 40 Rockwell C at 6/16 inch from the quenched end of the specimen.

8.4.2 Grade B Steel - Composition of the steel shall be such that in the standard Jominy test the hardness is greater than 50 Rockwell C at 8/16 inch from the quenched end of the specimen.

8.4.3 Frequency of Testing - The steel manufacturer shall have conducted a Jominy test from the first, middle, and last ingot of each heat of steel purchased.

8.5 Microscopic Inclusion Evaluation

8.5.1 Grade A and B steel shall meet the following requirements for inclusions.

8.5.2 Test Specimen - Specimens shall be prepared from approximately 4 inch (100-mm) forged, square section taken from the top and bottom of the first, middle and last ingot. The specimen shall be 3/8 by 3/4 inch (9.5 by 19 mm) and shall be taken from an area midway between the center and outside of the test section. Procedures outlined in Methods E 45 shall be followed.

8.5.3 Examination and Limits - Specimens shall be examined in accordance with Method E 45, Method D, using the modified JK Chart, Fig. 12 of Plate III. The worst field in any specimen shall not exceed the following limits:

	A	B	C	D
Thin	3.0	3.0	2.5	2.0
Thick	2.0	2.5	1.5	1.5

8.6 Nondestructive Test Requirements

8.6.1 To insure that all tools are free from the defects listed in 1.0, each tool shall be inspected after finish grinding by the supplier according to one of the following procedures.

8.6.1.1 Magnetic Particle Inspection in accordance with ASTM Method A-275.

8.6.1.2 Liquid Penetrant Inspection in accordance with ASTM Recommended Practice E-165.

9.0 Design

9.1 All tools shall conform substantially when applicable to the dimensions here set forth. Dimensions for head contours as shown on Pages 31, 32, 33 and 34 will conform to the following:

9.1.1 Head Contour

9.1.1.1 Heads of tools with a round cross section shall be ground to the corner contours prescribed in Pages 32, 33 and 34.

9.1.1.2 Heads of tools with a hexagonal or octagonal cross section shall also be ground to the corner contours prescribed in Pages 32, 33 or 34. In addition, the arcs not tangent to the hexagonal or octagonal corners shall be "blended" into a smooth contour similar to that shown on Page 34.

9.1.1.3 Punch ends shall have corner radii according to 9.1.1.1, but with no crown radius.

9.1.1.4 All ground surfaces shall be free of decarburization.

9.1.2 Handles

9.1.2.1. Material

Before manufacturing tool handles, the manufacturer shall ascertain which of the following kinds of ash or hickory will be accepted. Other woods will not be accepted unless specifically ordered.

Ash for fork, hoe, rake, scoop, shovel, and scythe handles.

Black ash (Fraxinus nigra)
Green ash (Fraxinus pennsylvanica lanceolata)
Oregon ash (Fraxinus oregona)
White ash (Fraxinus americana)

Hickory for adz, axe, canthook, chisel, hammer, hatchet, jack, maul, pick, punch and sledge handles.

Bitternut hickory (Hicoria cordiformis)
Mockernut hickory (Hicoria alba)
Nutmeg hickory (Hicora myristicaeformis)
Pignut hickory (Hicoria glabra)
Shagbark hickory (Hicoria ovata)
Shellbark hickory-Bigleaf (Hicoria laciniosa)
Water hickory (Hicoria acquatica)

9.1.2.2. Physical Requirements

Except as hereinafter provided, all tool handles shall be seasoned to a moisture content not exceeding 12 percent, and shall be free of injurious characteristics that may impair their serviceability, such as decay, cross grain, abrupt grain dip, holes, large knots, splits, heavy stain, warp, and lightweight wood.

Any tool handle may be either all heartwood, all sapwood, or a mixture of both.

9.1.2.3. Design

Tool handles shall conform to the design and dimensions shown on AREA plans which form a part of these specifications, with an allowable variation of 1/4 in. over or under in length and 1/16 in. over or under in all other dimensions.

9.1.2.4. Manufacture

Tool handles shall be cut square at the ends, uniform in size and shape for each type, smoothly finished, and waxed. Lacquered, painted, or stained handles are not acceptable.

The manufacturer shall legibly impress into each accepted handle, at a location and in a manner that will not weaken the handle and at a location designated by the purchaser, whatever grade, maker, or ownership symbol may be required by the purchaser.

9.1.2.5. Inspection

Handles will be inspected at points of manufacture, shipment, or destination, in suitable and convenient places satisfactory to the purchaser.

Inspectors representing the purchaser shall have free entry to the works of the manufacturer at all times while work on the contract of the purchaser is being performed, and shall have all reasonable facilities (including adequate light) afforded them, free of cost, to satisfy them that the handles being supplied are in accordance with these specifications.

Inspectors will make a reasonably close examination of each handle and acceptance or rejection will be based on visual inspection and the judgment of the inspector. He will not determine the exact weight and density of each handle, but in case of question, one or both of these characteristics may be accurately measured for conformance with the requirements for each grade. Exactness of size and shape will be checked by accurate measurements of handles taken at random.

Each handle will be judged independently, without regard for the decisions on others in the same lot.

The inspector shall have his identifying designation legibly branded into the grasp end of each accepted tool handle.

9.1.2.6. Definitions of Blemishes and Defects

cross grain.-Deviation of the fiber out of parallel with the axis of the handle in excess of 1 in 12 for ash and 1 in 20 for hickory.

abrupt grain dip.-Deviation of the fiber out of parallel with the axis of the handle in excess of one-eighth the diameter of the handle where the grain dip occurs.

slight grain dip.-Deviation of the fiber out of parallel with the axis of the handle **not** in excess of one-eighth the diameter of the handle where the grain dip occurs.

hole.-Holes (including bird pecks) may extend partially or entirely through the piece and be from any cause.

pin knot.-Average diameter not more than 1/16 in.

small knot.-Average diameter more than 1/16 in., but not more than 1/8 in.

medium knot.-Average diameter more than 1/8 in., but not more than 1/4 in.

split.-Lengthwise separation of the wood extending from one surface through the piece to the opposite surface or an adjoining surface.

light stain.-Slight difference in color which does not materially change the appearance of the handle.

medium stain.-Pronounced difference in color which does not obscure the grain of the wood.

small streak.-Threadlike discoloration extending not more than one-third the length of the handle.

medium streak.-Discoloration extending more than one-third the length of the handle, but not over 1/32 in. wide.

large streak.-Discoloration over 1/32 in. wide.

9.1.2.7. Delivery

Accepted handles shall be shipped in accordance with the instructions in the order covering them, securely packed in containers marked with the name, type, grade, and quantity of the material therein and with the name of the shipper and the number of the purchaser's contract or order.

9.1.2.8. Grade Classification

Grade Symbol	Color	Maximum Number of Annual Rings per Inch of Radius	Minimum Weight per Cu Ft Lb	Maximum Slope of Grain	Admissible Blemishes and Defects
AA	White, red or brown, or brown, red, and white; but dark brown or dark red only within 10 in. from tool end.	15	43	1 in 12	1 slight grain dip: tight pin knots and small streaks at least 12 in. apart; light stain.
AB	White, red, or brown, or brown, red, and white; but dark brown or dark red only within 10 in. from each end.	18	36	1 in 12	1 small tight knot at each end; 2 slight grain dips and 2 tight pin knots at least 6 in. apart; medium stain; 2 small streaks.

9.1.2.8. Grade Classification (Cont.)

Grade Symbol	Color	Maximum Number of Annual Rings per Inch of Radius	Minimum Weight per Cu Ft Lb	Maximum Slope of Grain	Admissible Blemishes and Defects
HA	Red or white or red and white.	17	55	1 in 50	Light stain; medium streaks
HB-1	Red or white or red and white.	22	46	1 in 50	Medium stain; large streak bird pecks or tight knots not more than ¼ in. in average diameter, in the eye end of first third of the grasp end.
HB-2	Red or white or red and white.	27	46	1 in 20	Medium stain; slight grain dip; large streak; bird pecks or tight knots, the sum or whose average diameters does not exceed ¼ in. in the eye end or the first third of the grasp end.

9.1.2.9. Use Classification

Handle	Handle Grade Symbol	Minimum Weight per Dozen Handles Lb.	Number of Tool Plan
Adz-34 in	HA	15	12
Axe-36 in	HA	17	----
Canthook	HB-1	----	----
Chisel (Track) 22 in	HB-2	7	17
Fork (Ballast)	AA	----	22
Hammer	HA	----	----
Hatchet	HA	----	----
Hoe	AB	----	----
Jack	HB-1	----	----
Maul (Spike) 36 in	HA	15	3
Pick-36 in	HA	21	1 & 2
Punch (Round track) 22 in	HB-2	7	19
Rake	AB	----	----
Scoop	AA	----	26
Scythe (Snath) 59 in	AA	----	29
Shovel (Track)	AA	----	21
Sledge-36 in	HA	14	13
Track Spike Lifter-22 in	HB-2	7	32

RECOMMENDED LIMITS OF WEAR FOR TOOLS TO BE RECLAIMED

Dashed lines and note indicating the limits of wear of tools to be reclaimed are shown on the plans of the following tools: Nos. C-1951.2, C-1953.2, C-1954.2, C-1955.2, C-1957.1, C-1961.2, C-1962.1, C-1965.2, C-1966.2, C-1967.2, C-1971.0, C-1975.0, C-1976.0, C-1977.0, C-1984.0

For reclaiming alloy track tools, company forces should be limited to grinding methods; where it is advisable to reclaim them by heating methods, due to the numerous and continuous changes in alloy they should be returned to the manufacturer who is familiar with their precise metallurgical content.

Non-Percussion Tools

(Inspection and Physical Tests)

10.0 Clay Pick - Plan No. C-1975.0
No special tests required.

11.0 Double pointed pick - Plan No. C-1962.1
No special tests required.

12.0 Tamping Pick - Plan No. C-1976.0
No special tests required.

13.0 Track Wrenches - Plan No. C-1970.2

One wrench to be tested from each lot of 10 dozen or less by applying for 1 minute a load of 400 lb. at a point distant from the jaw end equal to 95 percent of the total length of the wrench without any spreading of the jaw or any permanent set in the handle.

14.0 Lining Bar - Plan No. C-1953.1

One bar to be tested from each lot of 10 dozen or less by applying a load of 350 lb. 9 in. from the end of the handle, with the point suitably secured 6 in. from the end, without leaving a permanent set in excess of 1/4 in.

15.0 Rail Tongs - Plan No. C-1968.2
No special tests required.

16.0 Tie Tongs - Plan No. C-1969.2
No special tests required.

17.0 Timber Tongs - Plan No. C-1982.0

Three pairs of tongs to be tested from each lot of 10 dozen or less by suspending a load of 300 lb. to 400 lb. workwise in the tongs with the handles in a horizontal position and supported at a point 2 in. from the end. Deflection with 300 lb. weight shall not exceed 1 in. with no permanent set, and with 400 lb. weight deflection shall not exceed 1-1/4 in. with a permanent set of not to exceed 1/8 in.

18.0 Spike Puller - Plan No. C-1964.2

Sample of each lot manufactured to be tested in actual use by pulling a spike with a standard claw bar.

19.0 Rail Fork - Plan No. C-1959.1
No special tests required.

20.0 Claw Bar - Plan No. C-1952.2

One bar from each lot of 10 dozen or less to be tested by placing the claws of the bar 1/2 in. under the head of a standard track spike, rigidly placed and so located as to hold the bar in a horizontal position while a shock load equivalent to that of a 200 lb. weight falling a distance of 1 ft. is applied to the handle at a point 5 in. from its end, without the toes showing any cracks or the handle taking any permanent set.

21.0 Track Adz - Plan No. C-1951.2

Test one adz in each lot of 10 dozen or less by subjecting cutting edge to 5 normal blows on metal of the same composition as a railroad spike without breakage or serious nicking.

22.0 Carpenter's Adz - Plan No. C-1984.0
No special tests required.

23.0 Tamping Bar - Plan No. C-1955.1
No special tests required.

24.0 Insulated Track Gage - Plan No. 1960.2
No special tests required.

25.0 Track Shovel - Plan No. C-1966.2

25.1 Scope and Design

This specification covers the welded or riveted type and the solid shank type with either wood, malleable iron or combination wood metal handle tops. Dimension shall conform to plans, which are made a part of this specification. A variation of 1/2 in. more or less from the dimension shown on the plan for the length of the strap or shank and handle will be allowed. A variation of 1/4 in. more or less from the dimensions shown on the plan for the width or length of the blade will be allowed, but the total variation in the overall length of shovels shall not exceed 1/2 in. more or less of the dimensions shown on plan.

25.2 Materials

Blades shall be of carbon or alloy steel, with a Rockwell (Rc) hardness for carbon steel of 45 to 50.

Carbon-Steel blades shall have a thickness of not less than No. 13 gage and alloy blades shall be of not less than No. 14 gage U. S. Standard. The gage shall be measured at no less than 3 different points on the blade, not greater than 1/2 the distance from the cutting edge. For welded or riveted types, the straps shall be welded or riveted to the blade.

The hardness shall be measured at any point on the blade.

25.3 Handles and Tops

Handles shall be made of ash and shall conform to Grade AA as set forth in the general Specifications for Handles for Track Tools. The tops of handles shall be of the design specified and shall conform to plans that are made a part of this specification.

25.4 Tests

One shovel from each lot of 10 dozen or less shall be selected and metal straps (curved to fit the contour of the handle) shall be clamped to the upper and lower parts of the handle, after which the shovel shall be placed in a prying position, supported at the end of the blade by clamps and shall be capable of sustaining a load of 200 lb. suspended from the end for a period of 2 minutes without showing any permanent set, fracture or distortion.

Alloy steel shovels which have been given a heat treatment to insure uniformity in hardness shall be subjected to a shock test to insure against brittleness. The test shall be made by forcibly striking the blade at the shovel with a hand hammer at several places when placed on an anvil.

26.0 Ballast Fork - Plan No. C-1958.2

26.1 Scope and Design

The dimensions shall conform to the plans, which are made a part of this specification. The total variation in the overall length of the forks shall not exceed 1/2 inch more or less of the dimensions shown on plan.

26.2 Material

Forks shall be made of high-grade carbon steel. Tines of forks shall show Rockwell (Rc) hardness of 35-45. Straps shall be 0.04 U. S. Standard gage steel.

26.3 Handles

This specification covers either wood, malleable iron or combination wood-metal handle tops. Handles shall be made of ash and shall conform to Grade AA and be in accordance with the general Specification for Handles for Track Tools.

27.0 Track Tool Handles - Plan No. C-1973.0
No special tests required.

28.0 Rail Tongs for use with crane - Plan No. 1983.0. In the manufacture of the Rail Tongs, Section 8.6, Nondestructive Test Requirements will be adhered to.

29.0 Drive Spike Extractor Socket Wrench - Plan No. 1972.0.
No special tests required.

30.0 Pinch Bar - Plan No. C-1954.2

One bar to be tested from each lot of 10 dozen or less by applying a load of 350 lbs. 9 in. from the end of the handle, with the point suitably secured 6 in. from the end, without leaving a permanent set in excess of 1/4 in.

31.0 Buda Rail Bender - Plan No. C-1956.1
No special tests required.

32.0 Rail Chisel - Plan No. C-1957.2
No special tests required.

33.0 Track Spike Lifter - Plan C-1974.0
No special tests required.

34.0 Spike Maul - Plan No. C-1961.2
No special tests required.

35.0 Drift Pin - Plan No. C-1963.1
No special tests required.

36.0 Tie Plug Punch - Plan No. C-1965.2
No special tests required.

37.0 Round Track Punch - Plan No. C-1977.0
No special tests required.

38.0 Sythe - Plan No. C-1978.0
No special tests required.

39.0 Snath - Plan No. C-1979.0
No special tests required.

40.0 Sledge - Plan No. C-1967.3
No special tests required.

41.0 Nut Splitter - Plan No. C-1971.0
No special tests required.

42.0 Spot Board - Plan No. C-1980.0
No special tests required.

43.0 Rail Drilling Templates - Plan No. C-1981.1
No special tests required.

44.0 Track Welders Flatter - Plan No. 1985.0
No special tests required.

45.0 Brush Hook - Plan No. C-1986.0

45.1 Scope and Design

The dimensions shall conform to the plan which are made part of this specification. The eye shall be welded to the blade and handles power-wedged.

45.2 Materials

Blades shall be forged from C-1075 special bar, high-carbon tool steel. Blade shall be oil quenched and tempered to Rockwell (Rc) 50-52.

45.3 Handles

Handle shall be 36" bent axe handles and shall conform to, as set forth in the General Specifications for handles for track tools.

45.4 Tests

No special test

AREA PLANS FOR TRACK TOOLS

1978

Plan Number	Description	Grade of Steel	Hardness
1-62	Clay Pick	Carbon or Alloy	425-500 BHN
2-62	Tamping Pick	Carbon or Alloy	425-500 BHN
3-78	*Spike Maul	Alloy, Grade B	51-55 Rc
4-62	Track Wrenches	Carbon	375-450 BHN
5-62	Lining Bars	Carbon	300-375 BHN
6-62	Rail Tongs	Carbon	
7-62	Tie Tongs	Carbon or Alloy	
8-62	Timber Tongs	Carbon or Alloy	
9-62	Spike Puller	Carbon	375-450 BHN
10-62	Rail Fork	Carbon	275-350 BHN

Plan Number	Description	Grade of Steel	Hardness
11-78	Claw Bar	Carbon	300-375 BHN
12-62	*Track Adz	Carbon or Alloy	375-450 BHN
12-A-62	*Carpenter's Adz	Carbon or Alloy	
13-78	*Double-Faced Sledge	Alloy, Grade B	51-55 Rc
14-62	Chisel End Tamping Bar	Carbon	425-500 BHN
15-62	Spear End Tamping Bar	Carbon	425-500 BHN
16-62	Tie Plug Driver	Carbon	
17-78	*Track Chisel	Alloy, Grade B	44-48 Rc(Head) 56-60 Rc(Point)
19-78	*Round Track Punch	Alloy, Grade B	44-48 Rc(Head) 52-56 Rc(Punch End)
20-62	Track Gage-Pipe Center	See Plan	
20-A-62	Track Gage-Wood Center	See Plan	
21-62	Track Shovels	Carbon or Alloy	45-50 Rc

Plan Number	Description	Grade of Steel	Hardness
22-62	Ballast Forks	Carbon	35-45 Rc
25-78	Track Tool Handles		
26-62	Scoop	Carbon or Alloy	45-50 Rc
27-68	Aluminum Combination Track Level & Gage (Insulated)		
28-62	Scythe	See Plan	54-58 Rc
29-62	Snath	See Plan	
30-62	Spot Board	See Plan	
31-78	Rail Tongs for Use with Crane	See Plan	
32-78	Track Spike Lifter	Alloy,	44-48 Rc(Head) 44-48 Rc(Claw)
33-62	Drive Spike Extractor Socket Wrench	Carbon	300-350 BHN
34-71	Rail Thermometer		
35-77	Nut Cutter	Alloy, Grade B	44-48 Rc(Head) 56-60 Rc(Point)

*When specified, the small-eyed track tools will be furnished with AREA handles. The handles are to be properly fitted and wedged; 36-inch handles are to be furnished for tools weighing 6-lb. and over, and 16-inch handles for tools weighing under 6-lb., except that 24-inch handles are to be furnished for track chisels, tie plug punch, and round track punch.

Chemical Specification for Carbon Steel Track Tools

+Carbon . . . . . 0.55 to 0.70
Manganese . . . 0.60 to 0.90
Phosphorous . . . . . 0.05 max.
Sulfur . . . . . 0.05 max.

+Applies to all carbon steel tools

Chemical Specification for Alloy Steel Track Tools, Grade A & B

Gra	Carbon		Manganese		Phos	Sul-fur	Silicon		Vanadium		Molyb-denum	
	Min	Max	Min	Max	Max	Max	Min	Max	Min	Max	Min	Max
A	.51	.60	.75	1.00	.025	.025	1.80	2.20				
B	.51	.60	.75	1.00	.025	.025	1.80	2.20		.45	.35	.50

Grade A or Grade B should be specified when inquiring or ordering.

Hand Tool Contour Dimensions

Type of Tool	Tool Size	Stock Diameter of Head* (D)	Radius of Crown on Face (R)	Corner Dimensions Radius (r)	Indentation (C)	See Instruction Sheet
Sledges	6 Lb. 8 Lb. 10 Lb. 12 Lb.	2-1/8" 2-1/4" 2-1/2" 2-5/8"	7.0" 7.0" 7.0" 7.0"	3/8" 7/16" 7/16" 7/16"		Pages 32 and 34
Spike Maul		1-1/4" 1-5/8"	7.0" 7.0"	1/8" 1/4"		Pages 32 and 34
Round Track Punch Track Chisel Nut Cutter Track Spike Lifter		1-5/8" 1-9/16" 1-9/16" 1-9/16"	2" 2" 2" 2"	7/16" 7/16" 7/16" 7/16"	7/32" 7/32" 7/32" 7/32"	Pages 33 and 34

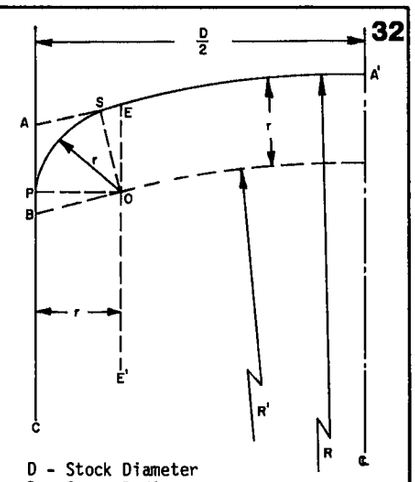
*Distance across flats, if tools are hexagons or octagons

INSTRUCTIONS A

Method for Establishing the Corner
Contour of Hand Tool Striking Faces

Refer to the Sketch when establishing the tool contact face contour according to the following steps:

Step 1 - Draw tool head centerline C/L.
Step 2 - Draw line AC, representing the side of the tool head. Except in tapered tools, this line is parallel to C/L at a distance of D/2. D is the stock diameter of the tool.
Step 3 - Draw arc AA' with a radius of R.
Step 4 - Draw line EE' parallel to line AC at a distance (r) equal to the corner radius to be used.
Step 5 - Draw arc BB' parallel to arc AA' at a distance equal to the corner radius. The radius of this arc (R') is equal to the crown radius minus the corner radius.
Step 6 - Draw arc SP with a radius r from point O, the intersection of line EE' and arc BB'. The resultant arc is tangent to arc AA' and line AC at points S and P, respectively.



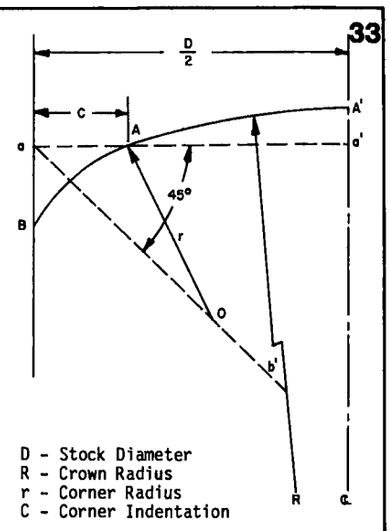
D - Stock Diameter
R - Crown Radius
r - Corner Radius
R'- Crown Radius - Corner Radius

INSTRUCTIONS B

Method for Establishing the Corner
Contour of Hand Tool Struck Faces
(3/4" Stock and Over)*

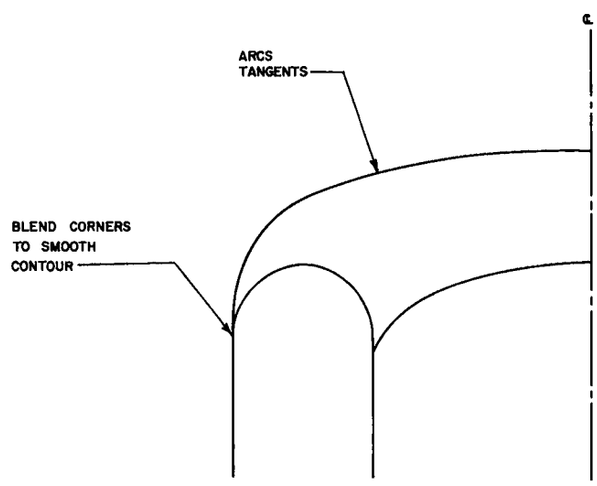
Refer to the Sketch when establishing the tool contact face contour according to the following steps:

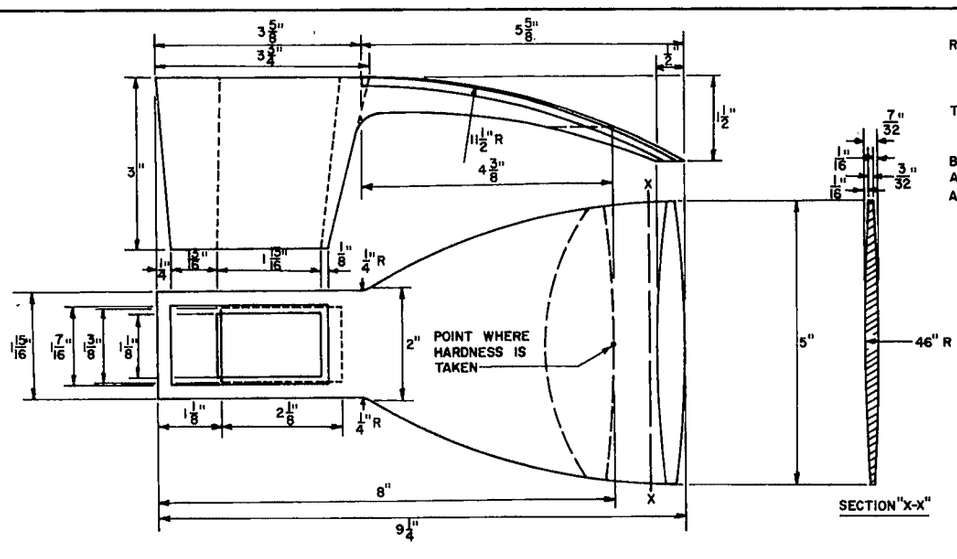
Step 1 - Draw tool head centerline C/L.
Step 2 - Draw line ab, representing the side of the tool head, parallel to C/L at a distance of D/2. D is the stock diameter of the tool.
Step 3 - Draw line aa' perpendicular to C/L.
Step 4 - Draw line ab' at a 45° angle from line aa'.
Step 5 - On line aa', locate point A, which is the distance C (corner indentation shown in table) from point a.
Step 6 - From point A, locate point O on line ab by scribing an arc of radius r (the corner radius).
Step 7 - From point O scribe the corner arc BA with radius (r).
Step 8 - From point A locate the center of struck face arc AA' by scribing arc of radius R (crown radius) so that it intersects C/L.
Step 9 - From this point of intersection scribe arc AA' with radius R.



D - Stock Diameter
R - Crown Radius
r - Corner Radius
C - Corner Indentation

CONTOUR BLENDING OF CORNERS



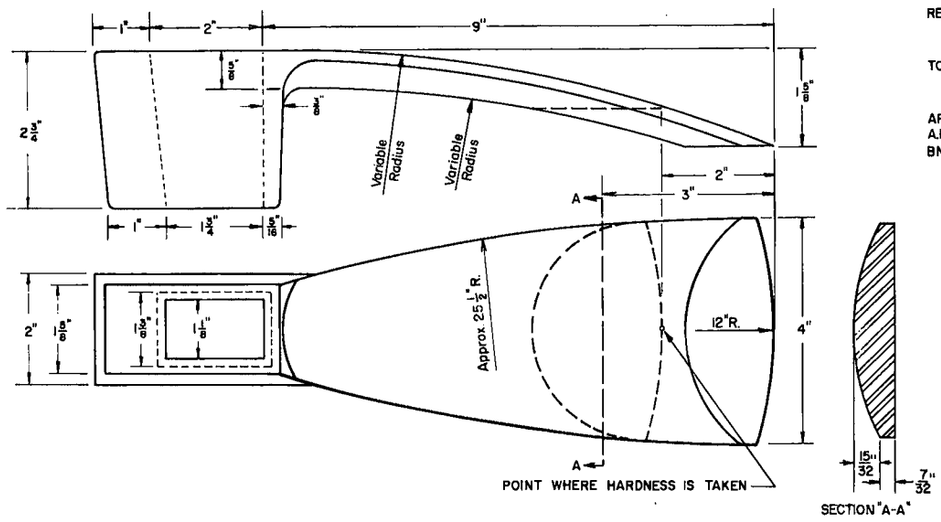


RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH
5% ON CROSS SECTION
BN STOCK. CODE NO. 45-906-2673X
A.R.E.A. PLAN NO. 12A-62
APPROX. WEIGHT 5 LBS.

BN INC.
PLAN OF
CARPENTERS ADZ
AUG. 1979

C-1984.0

36



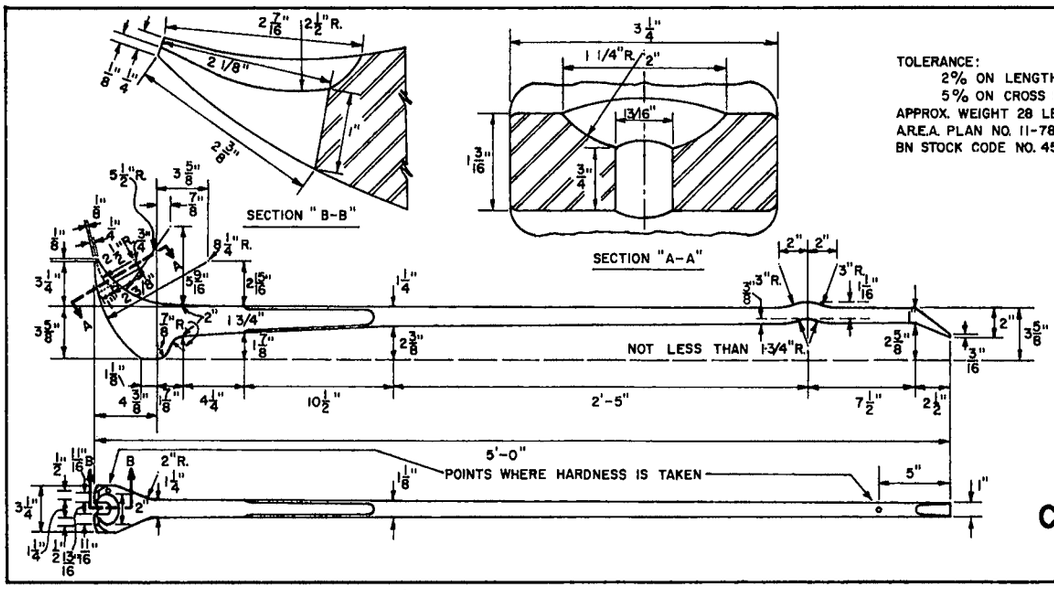
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH,
5% ON CROSS SECTION.
APPROX. WEIGHT 6 LBS.
A.R.E.A. PLAN NO. 12-62
BN STOCK CODE NO. 45-906-26756

B.N. INC.
PLAN OF
TRACK ADZ
NOV. 1975

C-1951.2

THIS PLAN SUPERSEDES PLAN NO. C-1951.1

37



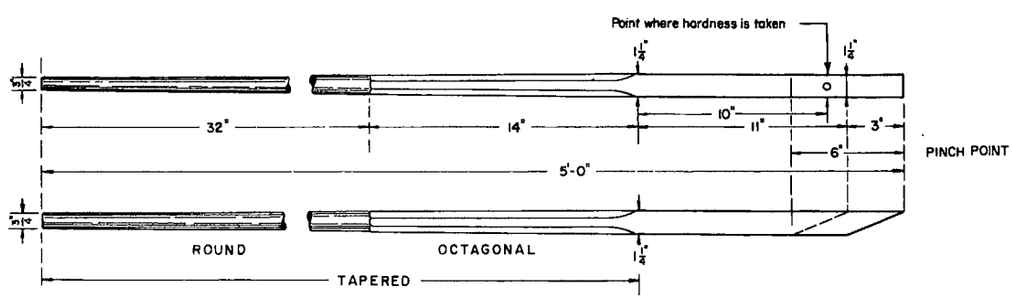
TOLERANCE:
2% ON LENGTH, LIFT AND LOCATION OF HEEL.
5% ON CROSS SECTION.
APPROX. WEIGHT 28 LBS.
A.R.E.A. PLAN NO. 11-78
BN STOCK CODE NO. 45-906-20506

B.N. INC.
PLAN OF
CLAW BAR
AUG. 1979

C-1952.2

THIS PLAN SUPERSEDES PLAN NO. C-1952.1

38



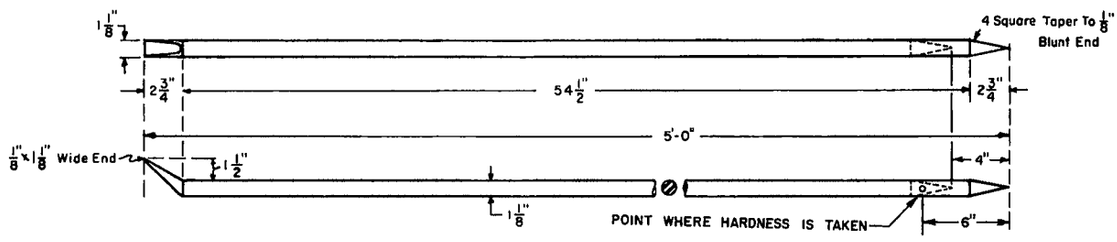
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 18 LBS.
A.R.E.A. PLAN NO. 5-62
BN STOCK CODE NO. 45-906-23504

B.N. INC.
PLAN OF
LINING BAR
NOV. 1975

C-1953.2

THIS PLAN SUPERSEDES PLAN NO. C-1953.1

39



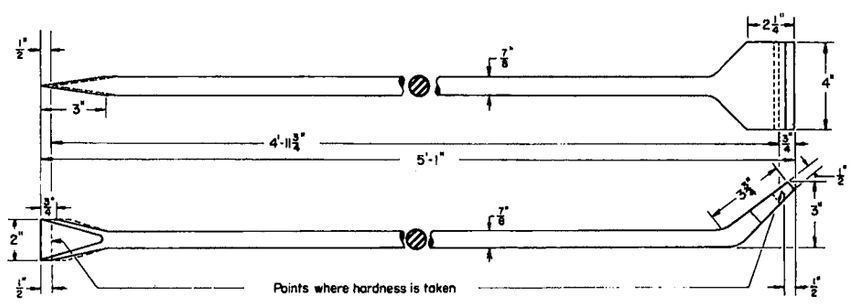
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 17 LBS.
BN STOCK CODE NO. 45-906-62503

B. N. INC.
PLAN OF
PINCH BAR
NOV. 1975

C-1954.2

THIS PLAN SUPERSEDES PLAN NO. C-1954.1

40



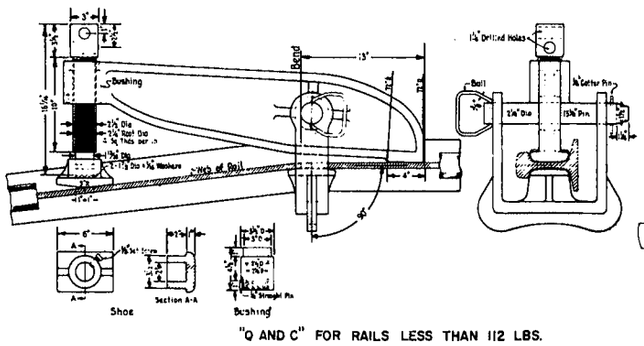
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 13 LBS.
A.R.E.A. PLAN NO. 14-62
BN STOCK CODE NO. 45-906-2550X

B. N. INC.
PLAN OF
TAMPING BAR
NOV. 1975

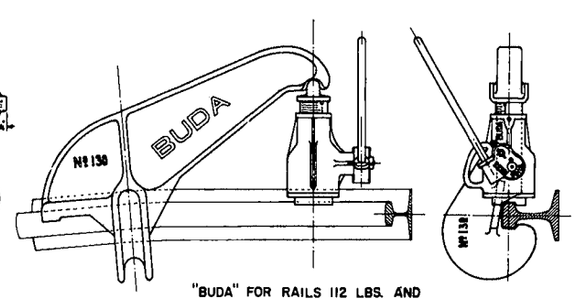
C-1955.2

THIS PLAN SUPERSEDES PLAN NO. C-1955.1

41



"Q AND C" FOR RAILS LESS THAN 112 LBS.
PLAN NO. 2-12153
(WEB TYPE)
BN STOCK CODE NO. 45-717-05002



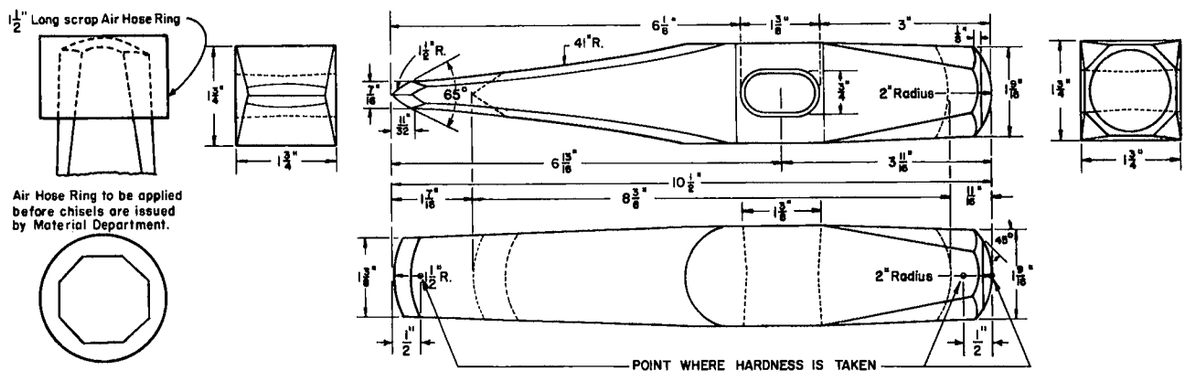
"BUDA" FOR RAILS 112 LBS. AND HEAVIER. MODEL NO. 130
(HEAD TYPE)
BN STOCK CODE NO. 45-717-05504

B. N. INC.
PLAN OF
RAIL BENDER
APR. 1972

C-1956.1

THIS PLAN SUPERSEDES PLAN NO. C-1956.0

42



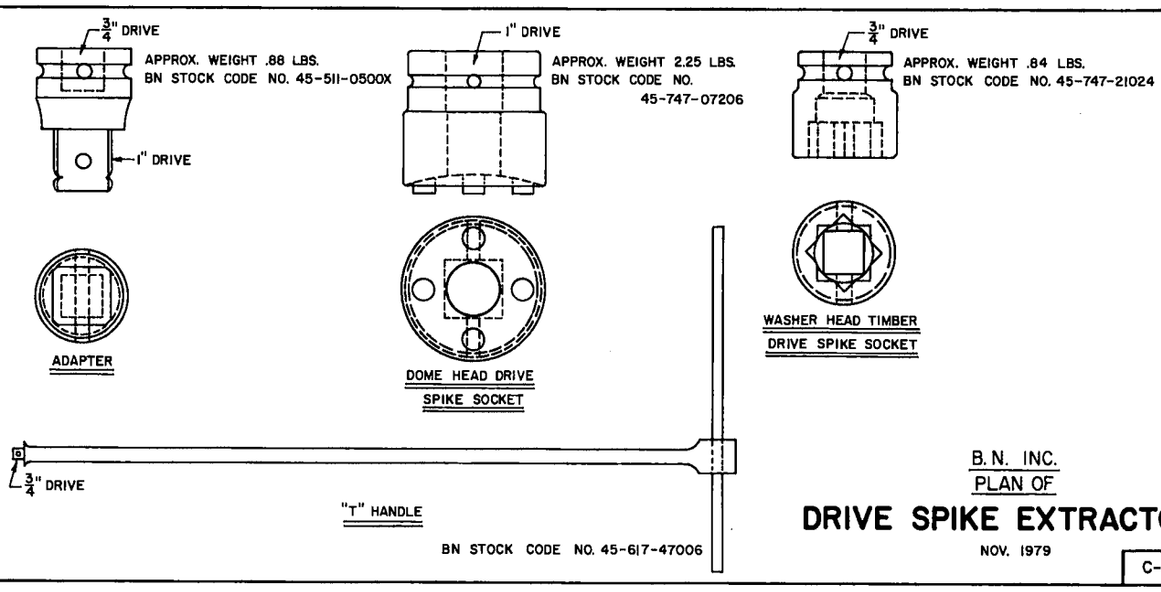
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
EYE TAPER TO CENTER:
4° ON LONG DIAMETER, 3° ON SHORT DIAMETER.
APPROX. WEIGHT 5 1/2 LBS.
A.R.E.A. PLAN NO. 17-78
BN STOCK CODE NO. 45-906-26254

B. N. INC.
PLAN OF
RAIL CHISEL
APR. 1972

C-1957.2

THIS PLAN SUPERSEDES PLAN NO. C-1957.1

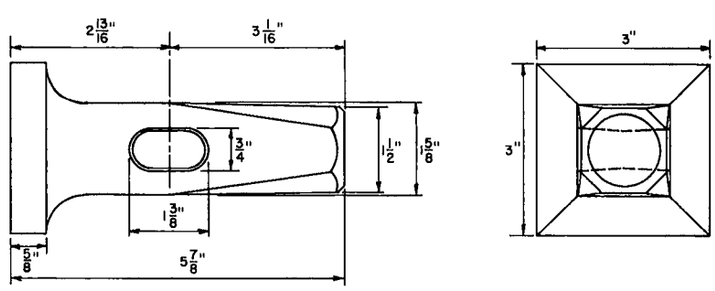
43



B. N. INC.
PLAN OF
DRIVE SPIKE EXTRACTORS
NOV. 1979

C-1972.0

44



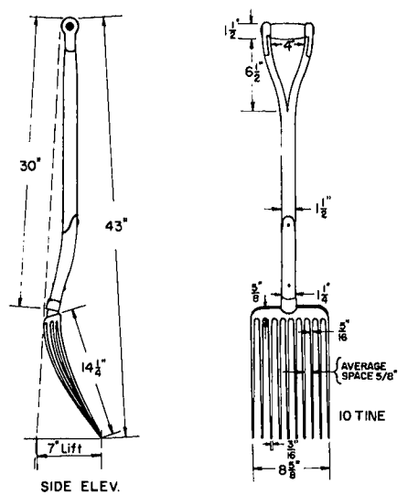
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION
BN STOCK CODE NO. 45-906-2200X
EYE TAPER TO CENTER:
4° ON LONG DIAMETER, 3° ON SHORT DIAMETER.
APPROX. WEIGHT 5.5 LBS.

B.N. INC.
PLAN OF
TRACK WELDERS FLATTER
NOV. 1962

C-1985.1

THIS PLAN SUPERSEDES PLAN NO. 3121-7-1 (GN)

45



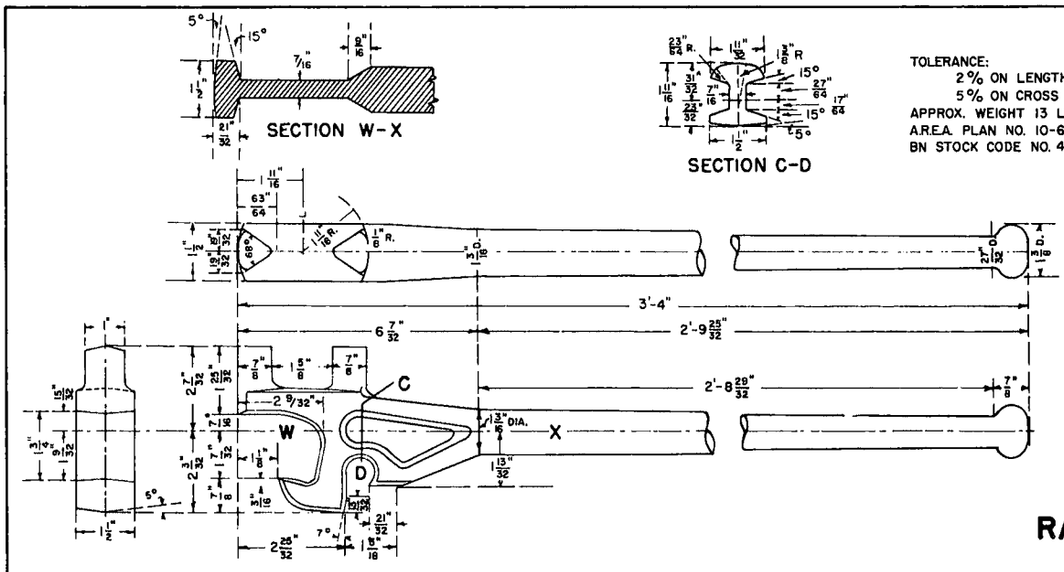
APPROX. WEIGHT 6.5 LBS.
A.R.E.A. PLAN NO. 22-62
BN STOCK CODE NO. 45-906-80509

B.N. INC.
PLAN OF
BALLAST FORK
NOV. 1975

C-1958.2

THIS PLAN SUPERSEDES PLAN NO. C-1958.1

46



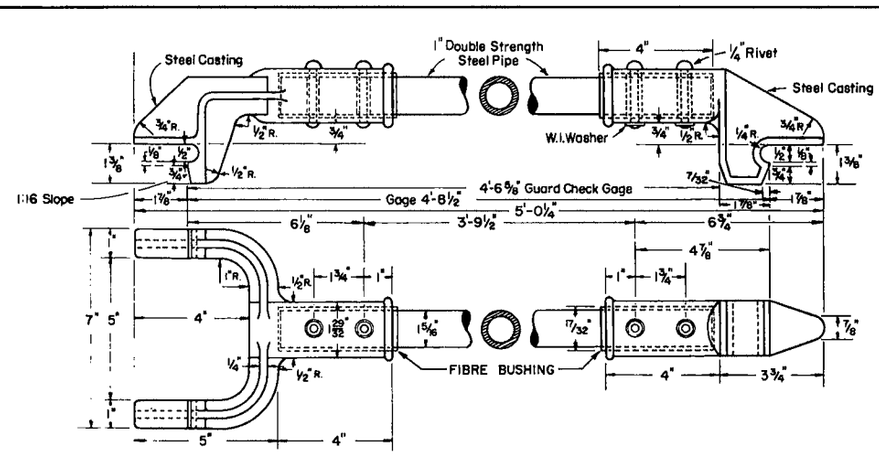
TOLERANCE:
2 % ON LENGTH.
5 % ON CROSS SECTION.
APPROX. WEIGHT 13 LBS.
A.R.E.A. PLAN NO. 10-62
BN STOCK CODE NO. 45-906-80250

B.N. INC.
PLAN OF
RAIL FORK
NOV. 1975

C-1959.2

THIS PLAN SUPERSEDES PLAN NO. C-1959.1

47



NOTE - Insulate by use of fibre bushings at both ends of gage. Center line to be marked on gage when required.

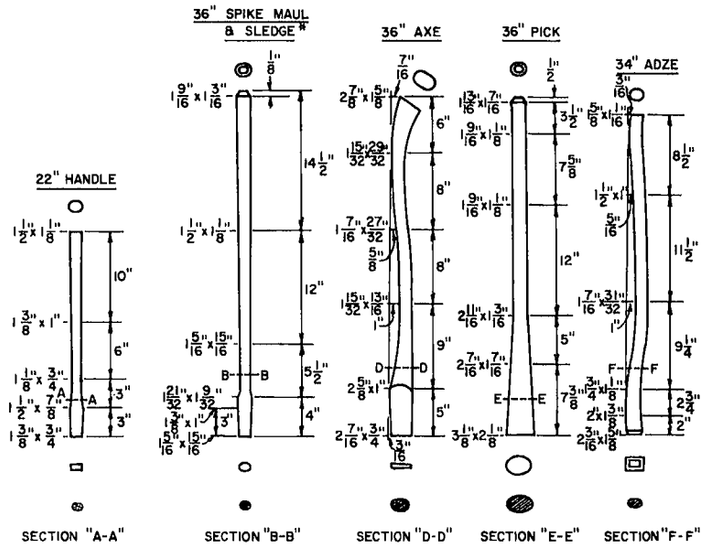
TOLERANCE:
NO TOLERANCE IN GAGE DISTANCE. 2 % ON LENGTH
5 % ON CROSS SECTION.
APPROX. WEIGHT 17 LBS.
A.R.E.A. PLAN NO. 20-62
BN STOCK CODE NO. 45-906-26000

B.N. INC.
PLAN OF
INSULATED TRACK GAGE
NOV. 1975

C-1960.2

THIS PLAN SUPERSEDES PLAN NO. C-1960.1

48



*NOTE:
30" HANDLE TO HAVE SAME HEAD AND HANDLE END DIMENSIONS AS THE 36" HANDLE. ONLY TOTAL LENGTH IS DIFFERENT.

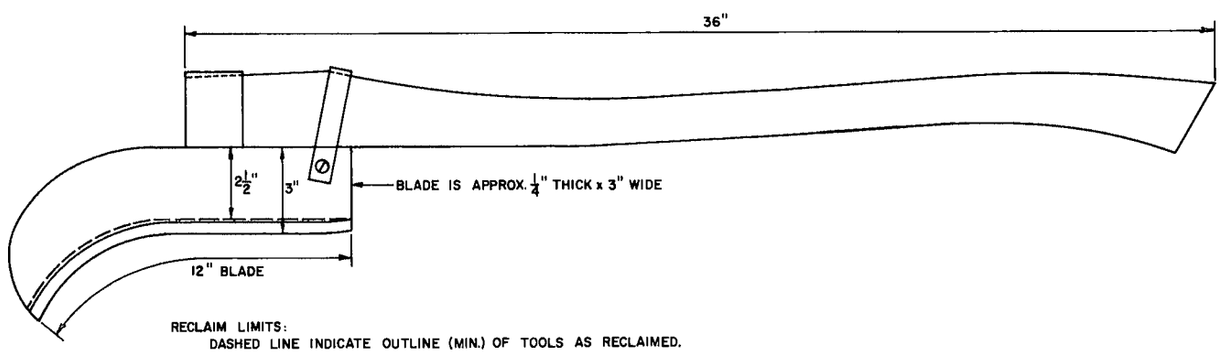
A.R.E.A. PLAN NO. 25-78
BN STOCK CODE NOS,
SPIKE MAUL & SLEDGE-45-617-35005
AXE-45-617-05252
PICK-45-617-4100X
ADZE-45-617-03003
22" HANDLE-45-617-25309

B.N. INC.
PLAN OF
TRACK TOOL HANDLES

AUG. 1979

C-1973.0

49



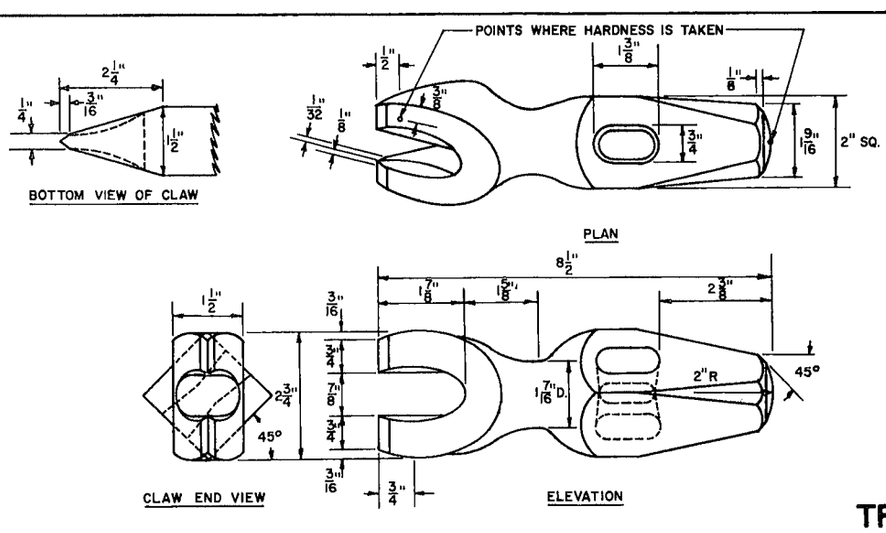
RECLAIM LIMITS:
DASHED LINE INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
5 % ON CROSS SECTION, 2 % ON LENGTH.
APPROX. WEIGHT 4.6 LBS.
BN STOCK CODE NO. 45-630-06500

B.N. INC.
PLAN OF
BRUSH HOOK

NOV. 1979

C-1986.0

50



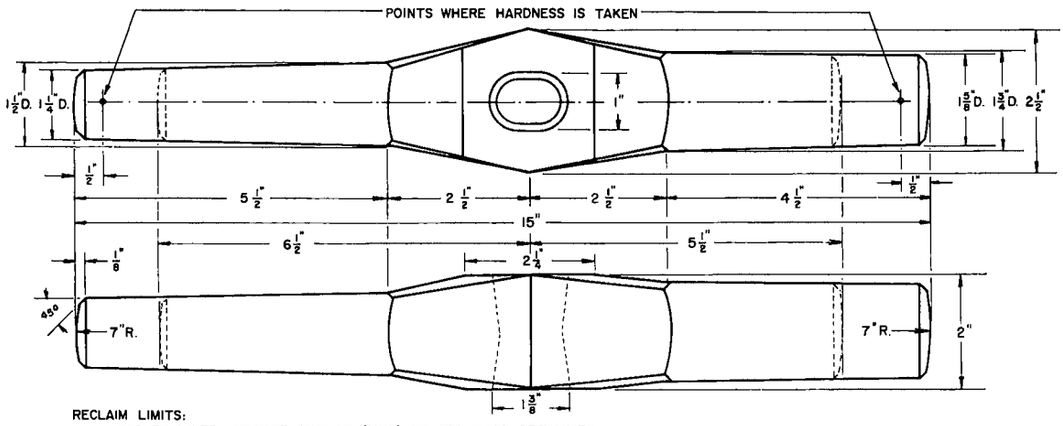
TOLERANCE:
2 % ON LENGTH
5 % ON CROSS SECTION
EYE TAPERED TO CENTER
4° ON LONG DIAMETER
3° ON SHORT DIAMETER
A.R.E.A. PLAN NO. 32-78
BN STOCK CODE NO. 45-906-25251
APPROX. WEIGHT 6 LBS. 5 OZ.

B.N. INC.
PLAN OF
TRACK SPIKE LIFTER

AUG. 1979

C-1974.0

51



RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
EYE TAPERED TO CENTER:
4° ON LONG DIAMETER, 3° ON SHORT DIAMETER.
APPROX. WEIGHT 10 LBS.
A.R.E.A. PLAN NO. 3-78
BN STOCK CODE NO. 45-906-2075X

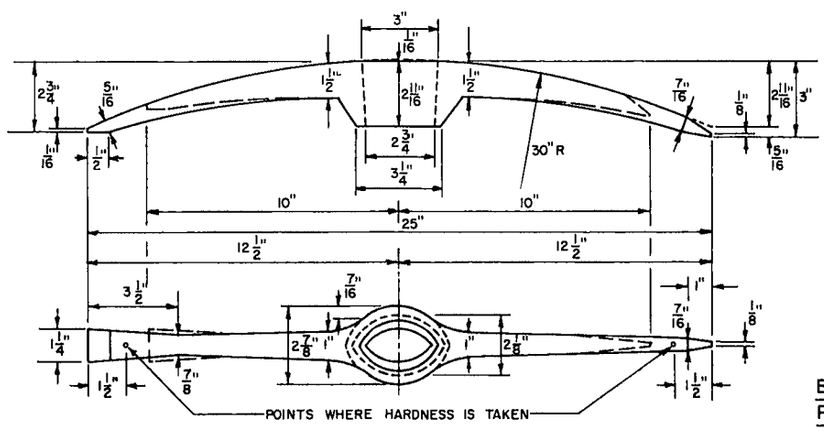
B.N. INC.
PLAN OF
SPIKE MAUL
NOV. 1975

C-1961.2

THIS PLAN SUPERSEDES PLAN NO. C-1961.1

52

NOTE:
CURVATURE OF BACK SHALL BE CONTINUOUS AND OF 30" RADIUS EXCEPT WHERE FLATTENED OVER THE EYE. RADIUS TO BE COINCIDENT WITH CENTER LINE OF EYE.
TOLERANCE:
2% ON LENGTH
5% ON CROSS SECTION
APPROX. WEIGHT 7 LBS.
A.R.E.A. PLAN NO. 1-62
BN STOCK CODE NO. 45-702-10008



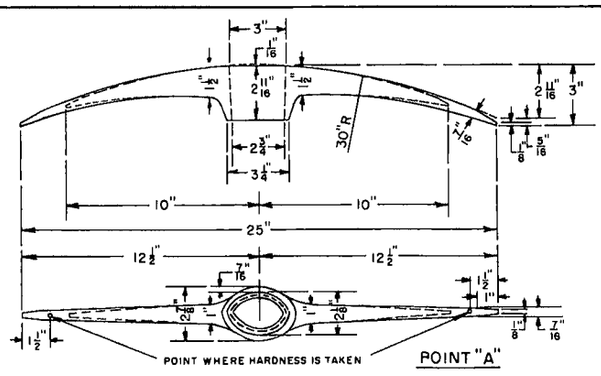
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.

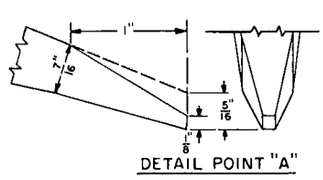
B.N. INC.
PLAN OF
CLAY PICK
AUG. 1979

C-1975.0

53

CURVATURE OF BACK SHALL BE CONTINUOUS AND OF 30" RADIUS EXCEPT WHERE FLATTENED OVER THE EYE. RADIUS TO BE COINCIDENT WITH CENTER LINE OF EYE.
RECLAIM LIMITS:
DASHED LINES INDICATES OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 7 LBS.
A.R.E.A. PLAN NO. 1-62
BN STOCK CODE NO. 45-906-31256



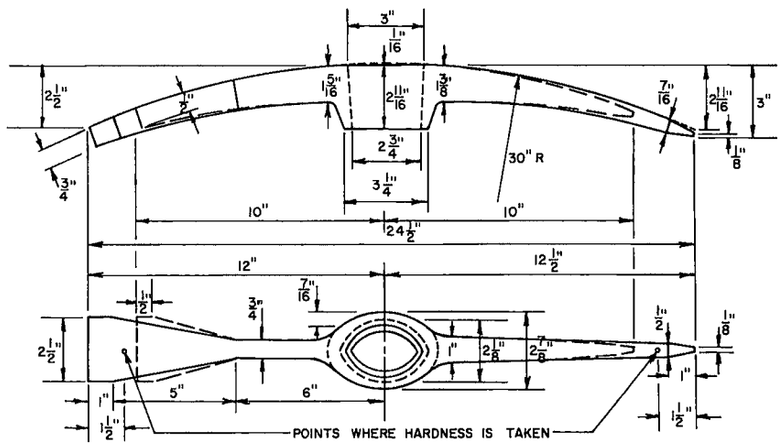


B.N. INC.
PLAN OF
DOUBLE POINTED PICK
APR. 1972

C-1962.1

THIS PLAN SUPERSEDES PLAN NO. C-1962.0

54



NOTE:
CURVATURE OF BACK SHALL BE CONTINUOUS AND OF 30" RADIUS EXCEPT WHERE FLATTENED OVER THE EYE. RADIUS TO BE COINCIDENT WITH CENTER LINE OF EYE.

TOLERANCE:
2% ON LENGTH
5% ON CROSS SECTION

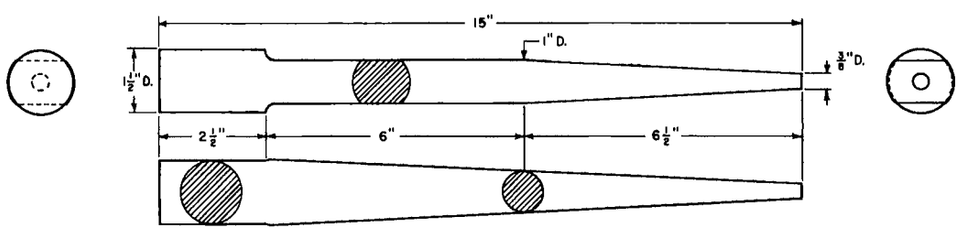
A.R.E.A. PLAN NO. 2-62
APPROX. WEIGHT 8 LBS.
BN STOCK CODE NO. 45-906-25278

RECLAIM LIMITS:
DASHED LINE INDICATES OUTLINE (MIN.) OF TOOLS AS RECLAIMED.

B.N. INC.
PLAN OF
TAMPING PICK
AUG. 1979

C-1976.0

55



TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
BN STOCK CODE NO. 45-906-26502
CAUTION:
DO NOT TEMPER OR HARDEN, COOL IN OPEN AIR AFTER FORGING.

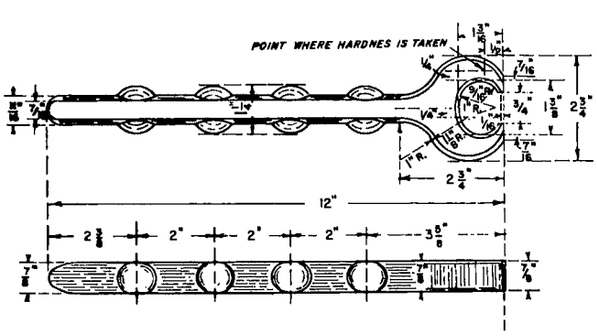
B.N. INC.
PLAN OF
DRIFT PIN
APR. 1972

C-1963.3

THIS PLAN SUPERSEDES PLAN NO. C-1963.2

56

TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 2 1/2 LBS.
A.R.E.A. PLAN NO. 9-62
BN STOCK CODE NO. 45-906-24507

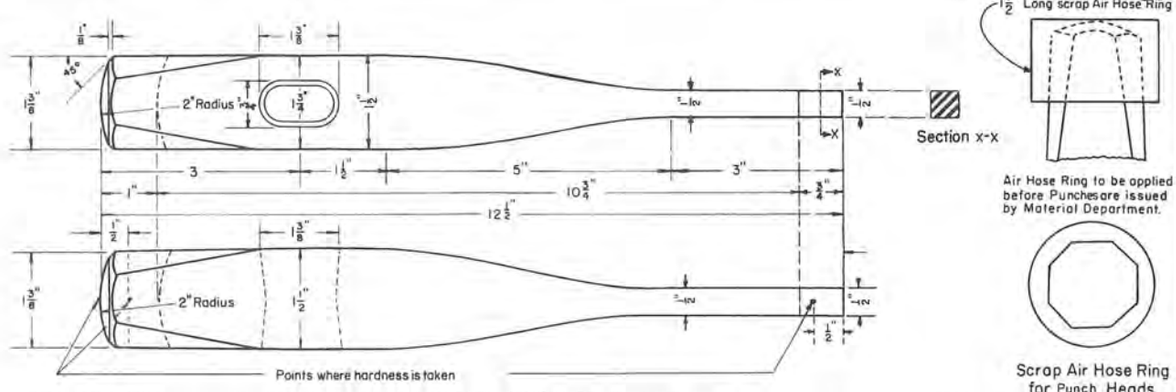


B.N. INC.
PLAN OF
SPIKE PULLER
NOV. 1975

C-1964.2

THIS PLAN SUPERSEDES PLAN NO. C-1964.1

57



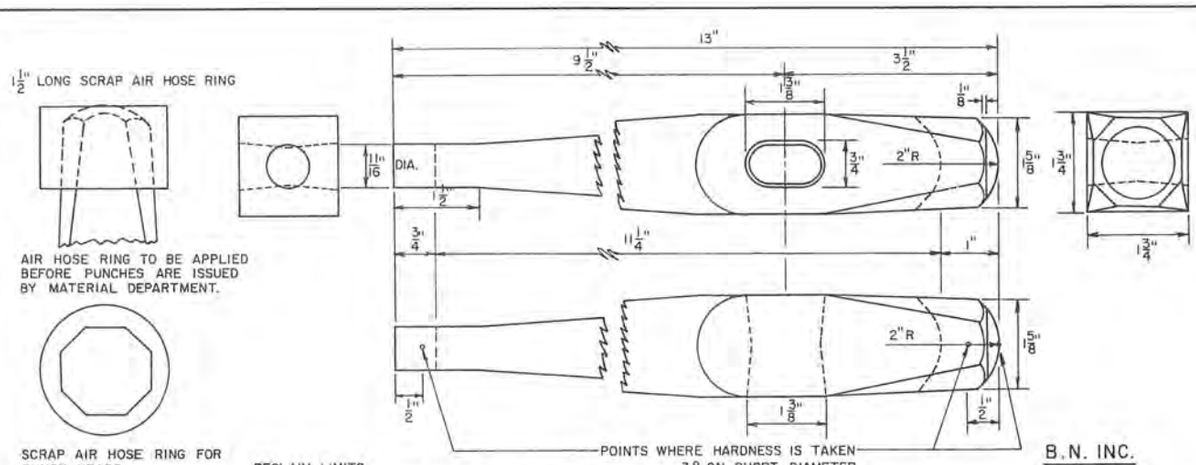
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
EYE TAPERED TO CENTER:
4° ON LONG DIAMETER
3° ON SHORT DIAMETER
APPROX. WEIGHT 4 LBS.

A.R.E.A. PLAN NO. 18-36
BN STOCK CODE NO. 45-906-23758

B. N. INC.
PLAN OF
TIE PLUG PUNCH
NOV. 1975
C-1965.2

THIS PLAN SUPERSEDES PLAN C-1965.1

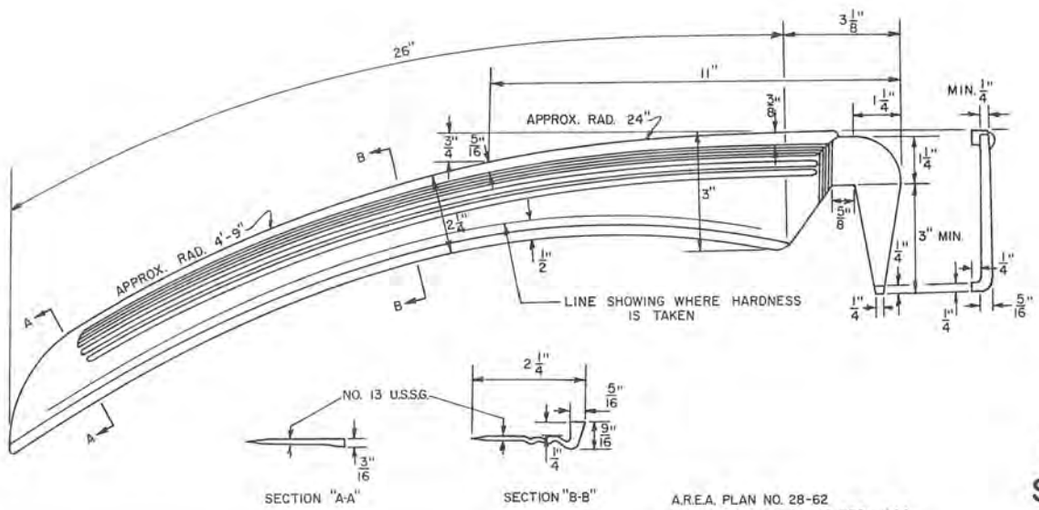
58



RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
EYE TAPERED TO CENTER:
4° ON LONG DIAMETER
3° ON SHORT DIAMETER
APPROX. WEIGHT 5 1/2 LBS.
A.R.E.A. PLAN NO. 19-78
BN STOCK CODE NO. 45-906-25307

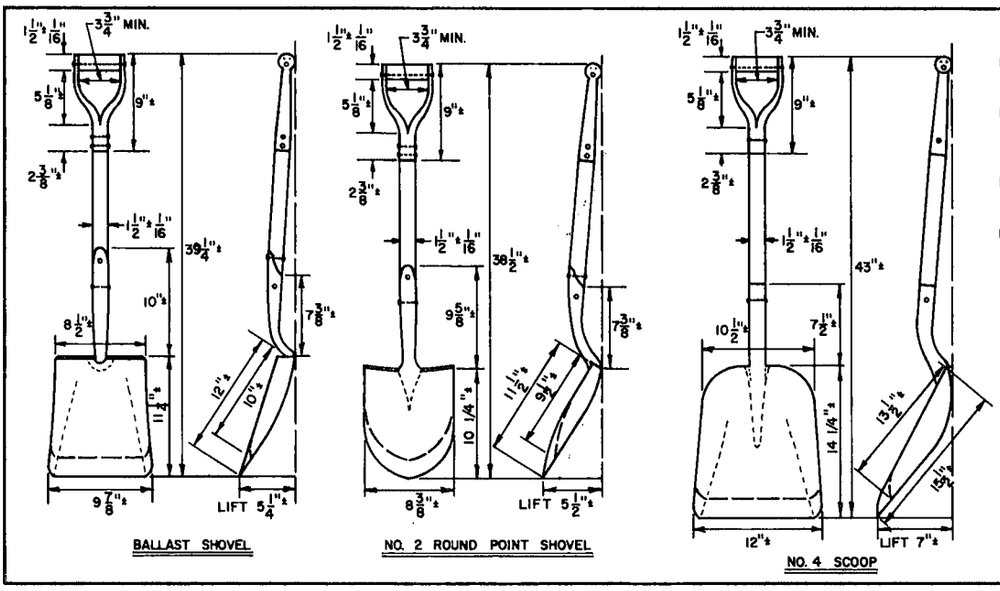
B. N. INC.
PLAN OF
ROUND TRACK PUNCH
AUG. 1979
C-1977.0

59



A.R.E.A. PLAN NO. 28-62
BN STOCK CODE NO. 45-735-11009

B. N. INC.
PLAN OF
SCYTHE
AUG. 1979
C-1978.0



60

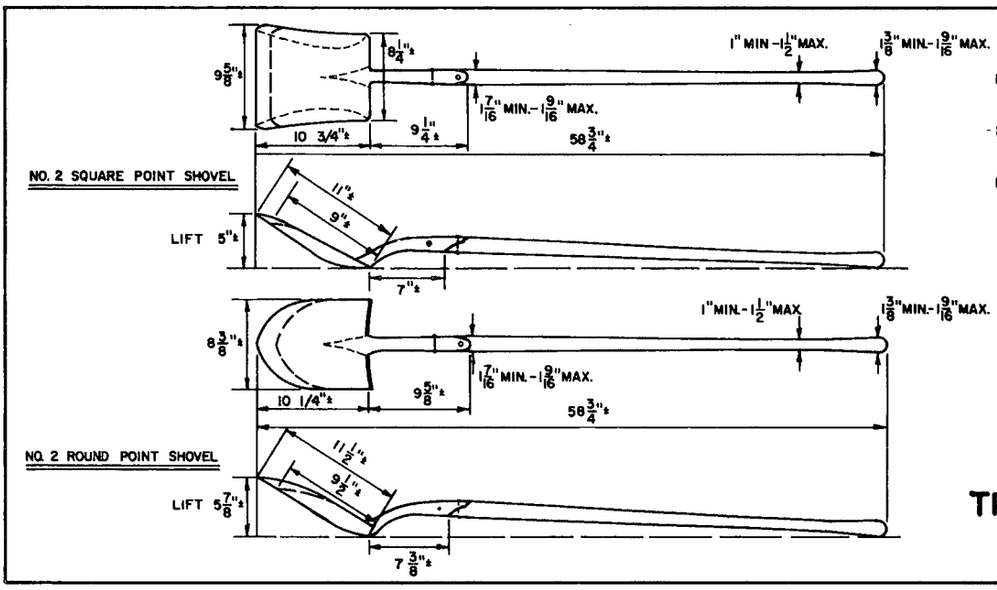
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
BALLAST SHOVEL:
APPROX WEIGHT 6 LBS.
A.R.E.A. PLAN NO. 21-62
BN STOCK CODE NO. 45-906-80007
NO. 2 ROUND POINT SHOVEL:
APPROX. WEIGHT 4.5 LBS.
BN STOCK CODE NO. 45-739-05008
NO. 4 SCOOP:
APPROX. WEIGHT 5.5 LBS.
BN STOCK CODE NO. 45-739-1000X

B. N. INC.
PLAN OF
TRACK SHOVELS

NOV. 1979

C-1966.2

THIS PLAN SUPERSEDES PLAN NO. C-1966.1



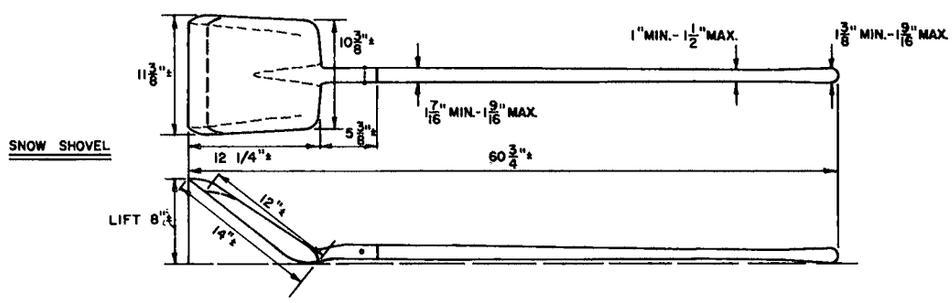
60 A

RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
NO. 2 SQUARE POINT SHOVEL:
APPROX. WEIGHT 4.0 LBS.
BN STOCK CODE NO. 45-739-11504
NO. 2 ROUND POINT SHOVEL:
APPROX. WEIGHT 4.25 LBS.
BN STOCK CODE NO. 45-739-03002

B. N. INC.
PLAN OF
TRACK SHOVELS

NOV. 1979

C-1966.2



60 B

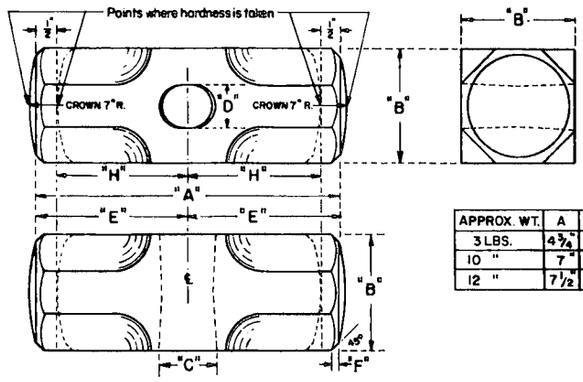
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
APPROX. WEIGHT 4.75 LBS.
BN STOCK CODE NO. 45-739-11002

B. N. INC.
PLAN OF
TRACK SHOVELS

NOV. 1979

C-1966.2

61



APPROX. WT.	A	B	C	D	E	F	H	BN STOCK CODE NO.
3 LBS.	4 3/4"	1 11/16"	1"	3/4"	2 3/8"	1/8"	2"	45-740-13001
10 "	7"	2 1/2"	1 3/8"	1"	3 1/2"	1/4"	3"	45-740-13757
12 "	7 1/2"	2 5/8"	1 3/8"	1"	3 3/4"	1/4"	3 1/4"	45-740-14004

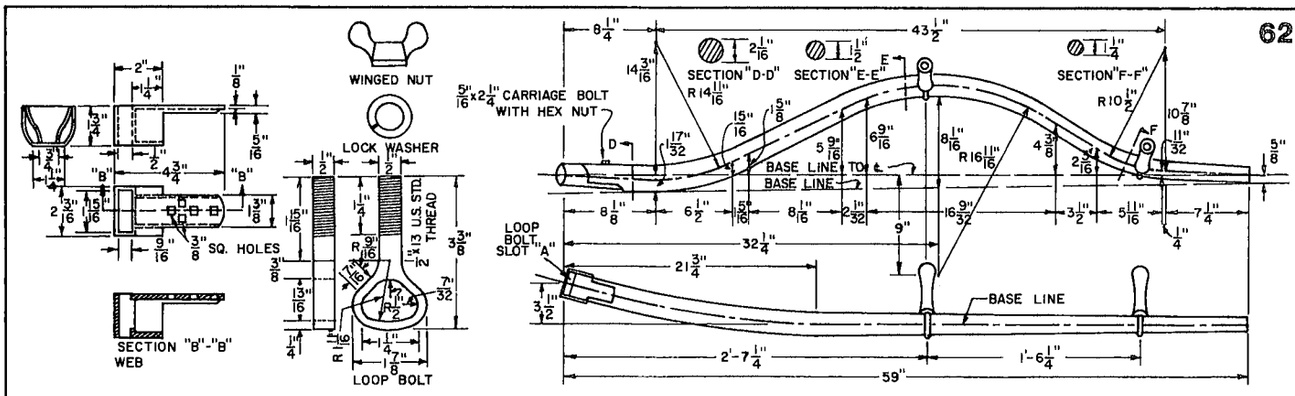
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2 % ON LENGTH, 5 % ON CROSS SECTION.
EYE TAPERED TO CENTER:
4° ON LONG DIAMETER, 3° ON SHORT DIAMETER.
A.R.E.A. PLAN NO. 13-78

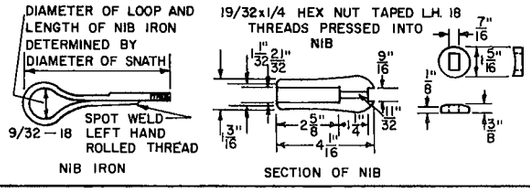
B.N. INC.
PLAN OF
SLEDGE
APR. 1972

C-1967.3

THIS PLAN SUPERSEDES PLAN NO. C-1967.2

62



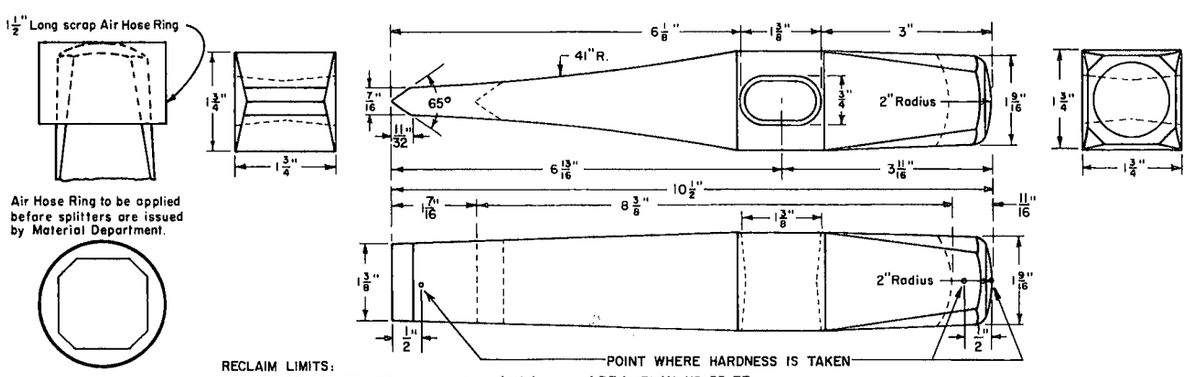


SNATH TO BE SELECTED SECOND GROWTH, STRAIGHT GRAINED NORTHERN WHITE ASH. NIB HANDLES TO BE STRAIGHT GRAINED HARDWOOD. WEB, LOOP BOLT, WINGED NUT, AND FERRULES TO BE OF MALLEABLE IRON. NIB IRON TO BE HIGH QUALITY COLD DRAWN ANNEALED WIRE.
TOLERANCE:
2 % ON LENGTH, 5 % ON CROSS SECTION.
A.R.E.A. PLAN NO. 29-62
BN STOCK CODE NO. 45-745-11000

B.N. INC.
PLAN OF
SNATH
AUG. 1979

C-1979.0

63



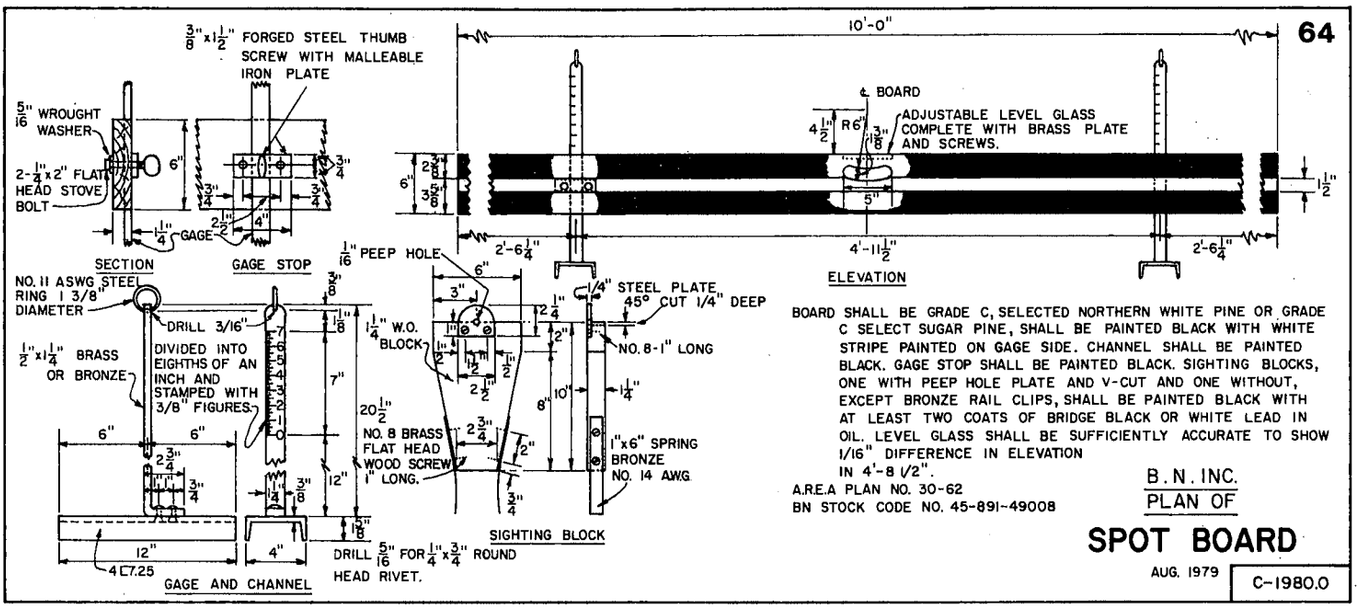
RECLAIM LIMITS:
DASHED LINES INDICATE OUTLINE (MIN.) OF TOOLS AS RECLAIMED.
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
EYE TAPERED TO CENTER:
4° ON LONG DIAMETER
3° ON SHORT DIAMETER
APPROX. WEIGHT 5 1/2 LBS.

A.R.E.A. PLAN NO. 35-77
BN STOCK CODE NO. 45-548-11209

B. N. INC.
PLAN OF
NUT SPLITTER
AUG. 1979

C-1971.0

64



BOARD SHALL BE GRADE C, SELECTED NORTHERN WHITE PINE OR GRADE C SELECT SUGAR PINE, SHALL BE PAINTED BLACK WITH WHITE STRIPE PAINTED ON GAGE SIDE. CHANNEL SHALL BE PAINTED BLACK. GAGE STOP SHALL BE PAINTED BLACK. SIGHTING BLOCKS, ONE WITH PEEP HOLE PLATE AND V-CUT AND ONE WITHOUT, EXCEPT BRONZE RAIL CLIPS, SHALL BE PAINTED BLACK WITH AT LEAST TWO COATS OF BRIDGE BLACK OR WHITE LEAD IN OIL. LEVEL GLASS SHALL BE SUFFICIENTLY ACCURATE TO SHOW 1/16" DIFFERENCE IN ELEVATION IN 4'-8 1/2".

A.R.E.A PLAN NO. 30-62
BN STOCK CODE NO. 45-891-49008

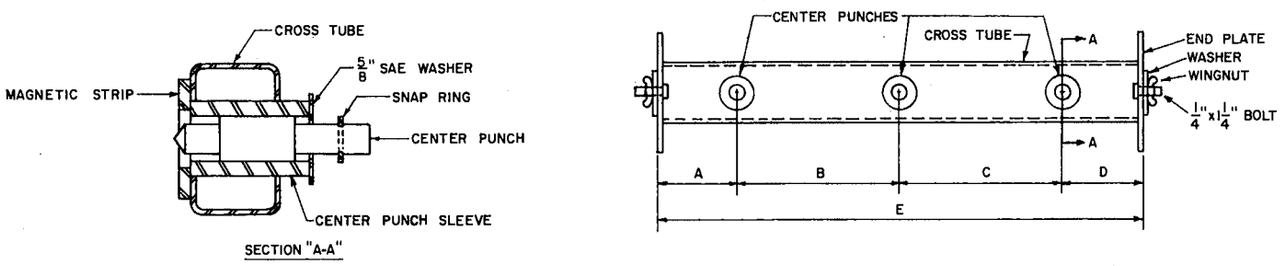
B.N. INC.
PLAN OF

SPOT BOARD

AUG. 1979

C-1980.0

65



RAIL WEIGHT	A	B	C	D	E	BN STOCK CODE NO.
112	2 1/2"	6 1/2"	6 1/2"	2 1/2"	1'-6"	45-906-7140X
115	3 1/2"	6"	6"	3 1/2"	1'-7"	45-906-71303
132/136	3 1/2"	6"	6"	3 1/2"	1'-7"	45-906-71004
131	2 1/2"	6 1/2"	6 1/2"	2 1/2"	1'-6"	45-906-69801

B.N. INC.
PLAN OF

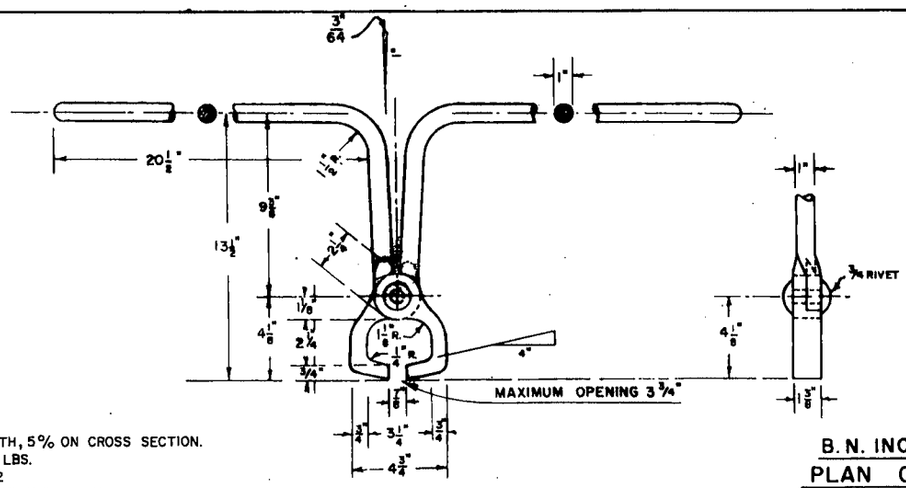
RAIL DRILLING TEMPLATE

AUG. 1979

C-1981.1

THIS PLAN SUPERSEDES PLAN NO. C-1981.0

66



TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 18 LBS.
A.R.E.A. PLAN NO. 6-62
BN STOCK CODE NO. 45-906-24750

B.N. INC.
PLAN OF

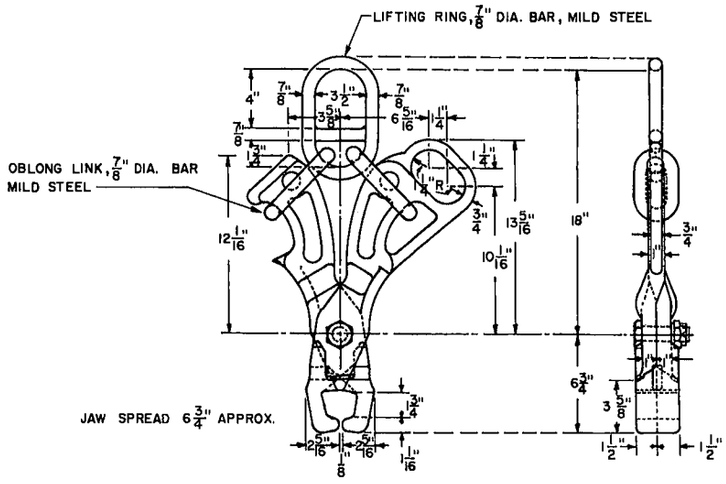
RAIL TONGS

NOV. 1975

C-1968.2

THIS PLAN SUPERSEDES PLAN NO. C-1968.1

67



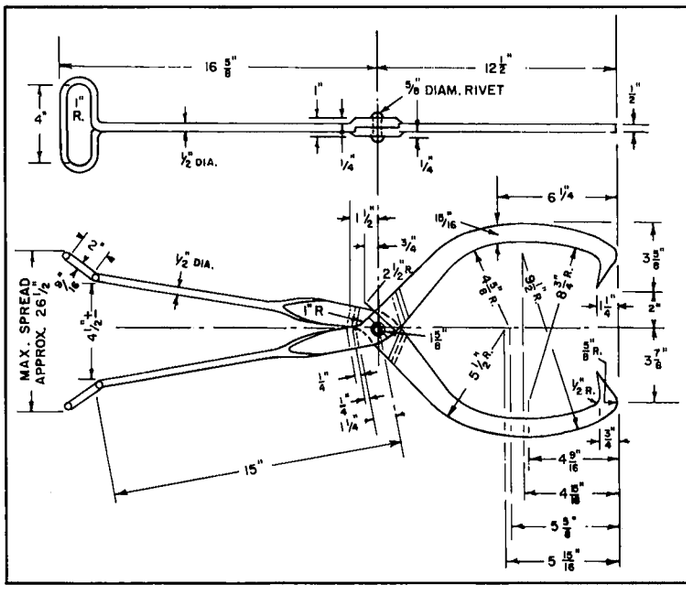
RAIL TONGS SHALL BE MADE OF HEAT TREATED ALLOY STEEL
A.R.E.A. PLAN NO. 31-78
BN STOCK CODE NO. 45-906-26676

B. N. INC.
PLAN OF
RAIL TONGS FOR USE WITH CRANE

AUG. 1979

C-1983.0

68



TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 10 LBS.
A.R.E.A. PLAN NO. 7-62
BN STOCK CODE NO. 45-906-25008
HANDLES CAN BE MADE FROM 1/2"x1" BARS IF PREFERRED, INSTEAD OF ROUNDS AS SHOWN.

PEAVY POINTS ARE TO BE FINISHED BY GRINDING

JAW OPENING:
4" MIN., 15 1/2" MAX.

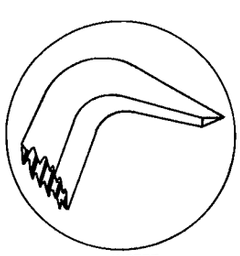
B.N. INC.
PLAN OF
TIE TONGS

NOV. 1975

C-1969.2

THIS PLAN SUPERSEDES PLAN NO. C-1969.1

69



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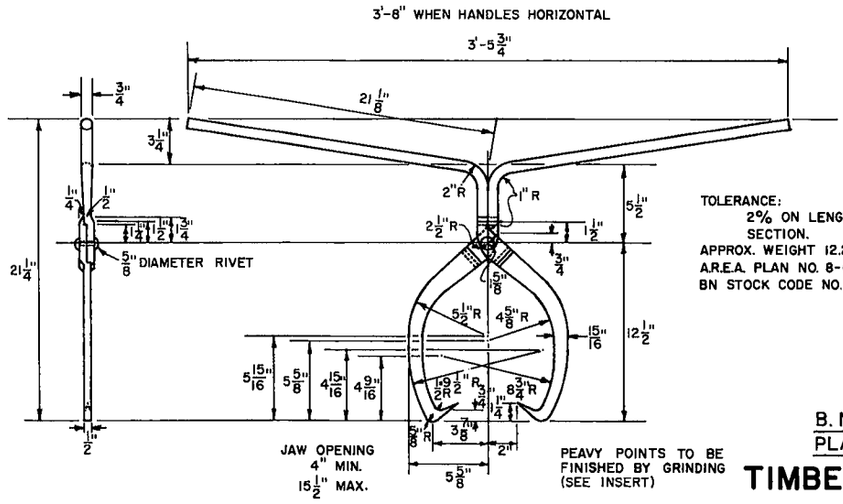


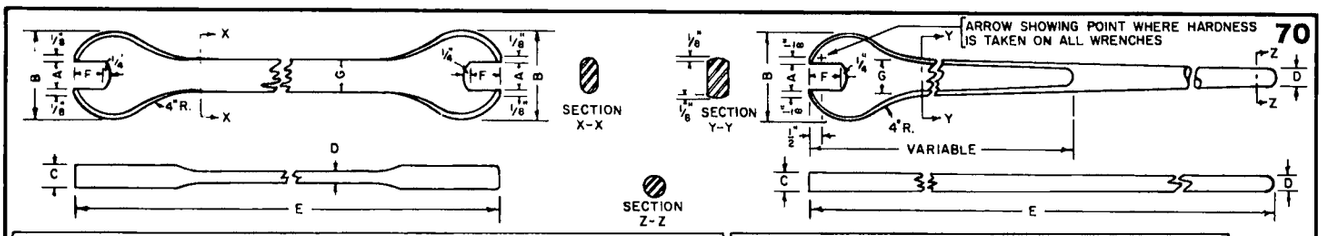
TOLERANCE:
2% ON LENGTH, 5% ON CROSS SECTION.
APPROX. WEIGHT 12.2 LBS.
A.R.E.A. PLAN NO. 8-62
BN STOCK CODE NO. 45-906-26641

PEAVY POINTS TO BE FINISHED BY GRINDING (SEE INSERT)

B. N. INC.
PLAN OF
TIMBER TONGS

AUG. 1979

C-1982.0



DOUBLE END - DIMENSIONS IN INCHES

BOLT SIZES	WIDTH OF NUT	A MIN.	A MAX.	A' MIN.	A' MAX.	B	B'	C	D	E	F	F'	G
3/4 & 7/8	1 1/4 & 1 7/16	1.257	1.330	1.445	1.519	3 1/2	4	15/16	1/2	36	1 1/4	1 1/4	1 1/2
7/8 & 1	1 7/16 & 1 5/8	1.445	1.519	1.634	1.709	4	4	15/16	1/2	42	1 1/4	1 3/8	1 1/2
** 1 & 1 1/8	1 1/2 & 1 11/16	1.508	1.583	1.696	1.771	4	4 1/8	15/16	9/16	48	1 3/8	1 9/16	1 1/2
1 & 1 1/8	1 5/8 & 1 13/16	1.634	1.709	1.822	1.898	4	4 1/8	15/16	9/16	48	1 3/8	1 9/16	1 1/2
1 1/8 & 1 1/4	1 13/16 & 2	1.822	1.898	2.011	2.088	4 1/8	4 1/2	*	9/16	48	1 9/16	1 3/4	1 1/2
1 1/4 & 1 3/8	2 & (1) 2 3/16	2.011	2.088	2.199	2.277	4 1/2	5	1	9/16	48	1 3/4	1 15/16	1 1/2

NOTE, ** SIZES NOT RECOMENDED FOR NEW DESIGN. * C = 13/16 ON 1 1/8" END, 1" ON 1 1/4" END.

1. WIDTH OF NUT SHALL BE STAMPED PLAINLY IN 3/4" CHARACTERS ON ONE SIDE OF HEAD NEAR EACH JAW.
2. TOLERANCE: 2% ON LENGTH – 5% ON CROSS SECTION.
3. SINGLE END WRENCH WILL BE FURNISHED WITH END TAPERED ON LAST 6" TO 1 1/2" DIA. AT END WHEN SPECIFIED.
4. ALL WRENCH JAWS SHALL BE MILLED TO DIMENSIONS SPECIFIED.

A.R.E.A. PLAN NO. 4-62 BN STOCK CODE NOS. (1) 45-937-50103 (2) 45-815-68005

SINGLE END DIMENSIONS IN INCHES

BOLT SIZES	WIDTH OF NUT	A MIN.	A MAX.	B	C	D	E	F	G
3/4 (2)	1 1/4	1.257	1.330	3 1/2	15/16	3/4	30	1 1/4	1 1/2
7/8 (3)	1 7/16	1.445	1.519	4	15/16	3/4	36	1 1/4	1 1/2
** 1	1 1/2	1.508	1.583	4	15/16	7/8	42	1 3/8	1 1/2
1 (4)	1 5/8	1.634	1.709	4	15/16	7/8	42	1 3/8	1 1/2
** 1 1/8	1 11/16	1.696	1.771	4 1/8	15/16	7/8	48	1 9/16	1 1/2
1 1/8 (5)	1 13/16	1.822	1.898	4 1/8	15/16	7/8	48	1 9/16	1 1/2
1 1/4 (6)	2	2.011	2.088	4 1/2	1	7/8	48	1 3/4	1 1/2
1 3/8 (7)	2 3/16	2.199	2.277	5	1	7/8	54	1 15/16	1 1/2

(3) 45-815-68101
(4) 45-815-68208
(5) 45-815-68304
(6) 45-815-68400
(7) 45-815-68507

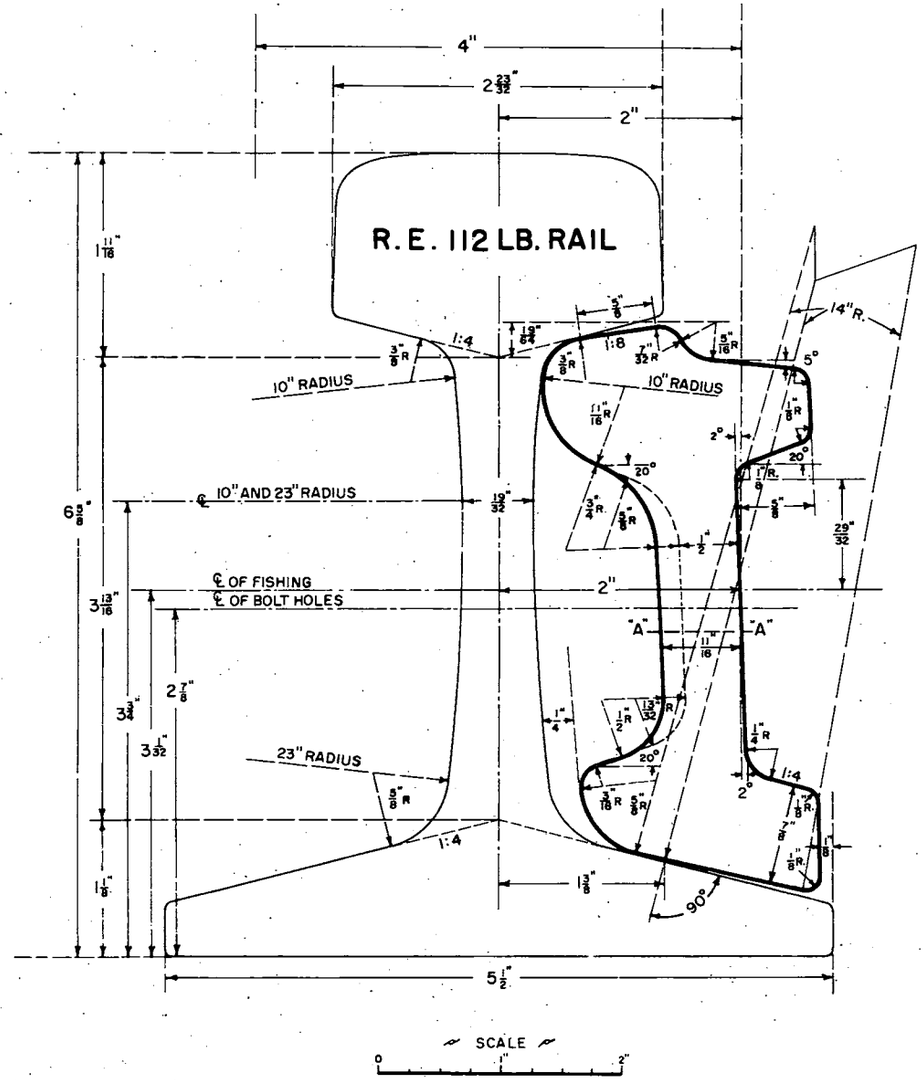
B. N. INC.
PLAN OF
TRACK WRENCHES

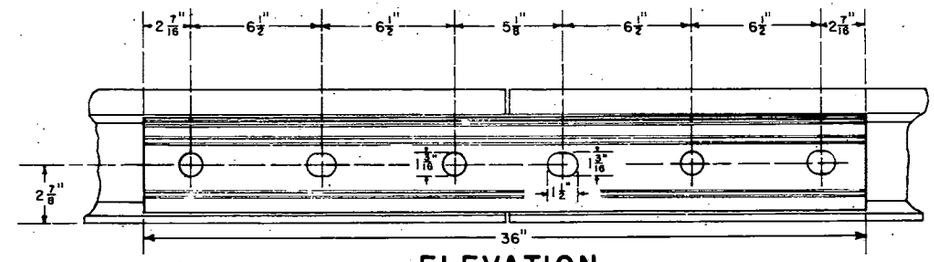
C-1970.2

THIS PLAN SUPERSEDES PLAN NO. C-1970.1

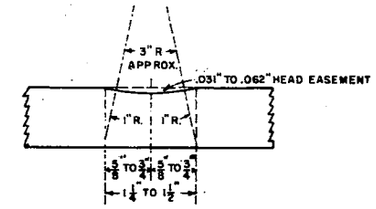
NOV. 1975

PORTEC INC. FILE 155-644
TEMPLATE 112T-16

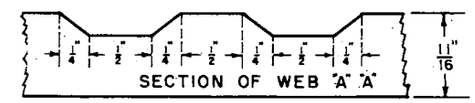




ELEVATION



DETAIL OF HEAD EASEMENT



JOINT

M.I. 23.5
S.M. T. 10.7
B. 9.7

GROSS W.T. 1 BAR 53.45 LBS.

BURLINGTON NORTHERN INC.

STANDARD PLAN

36" TOELESS HEADFREE JOINT BAR FOR R.E. 112 LB. RAIL

(FOR JOINING RIBBON RAIL SECTIONS)

ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971.

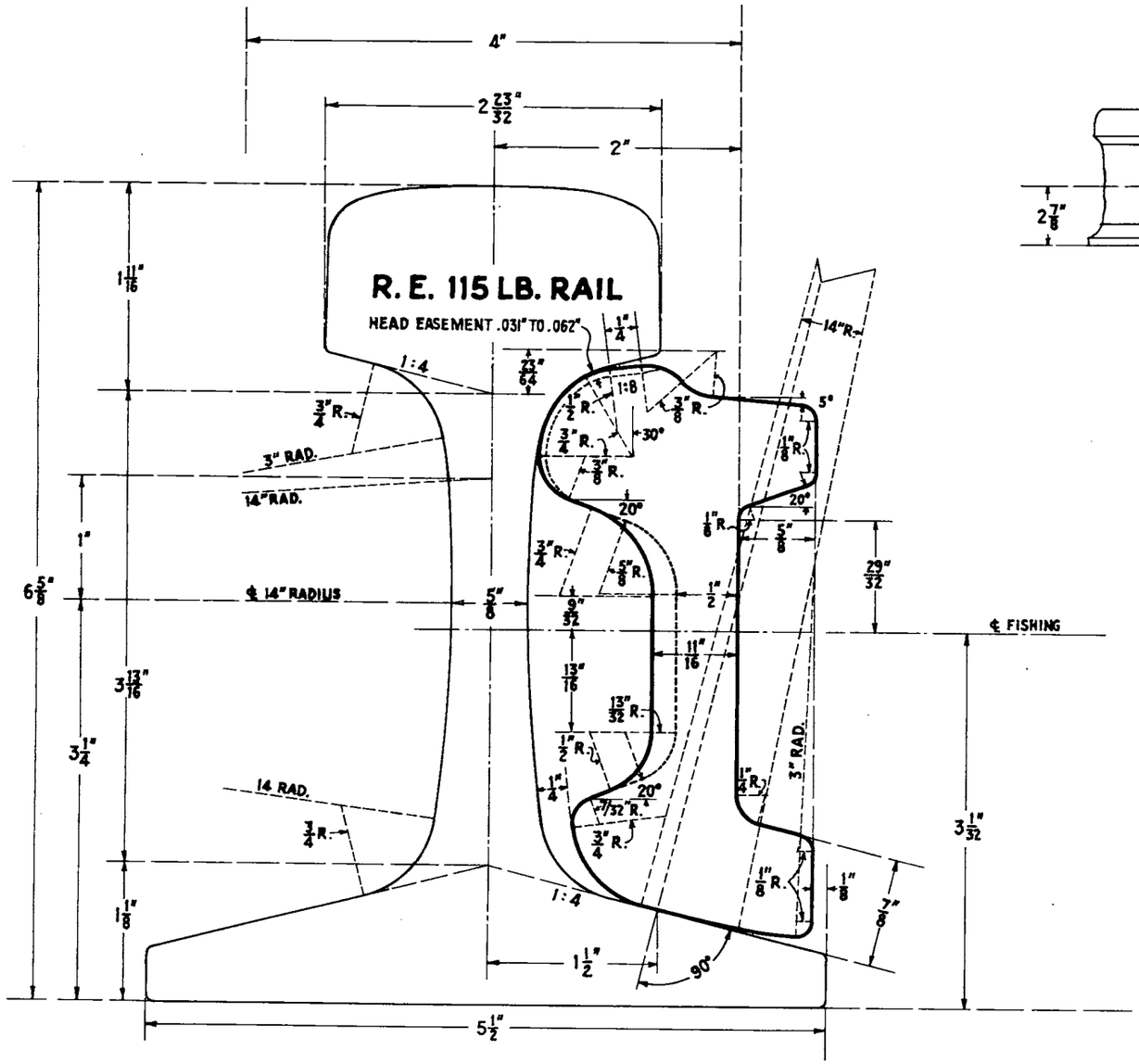
Recommended: Asst. Vice President Engineering

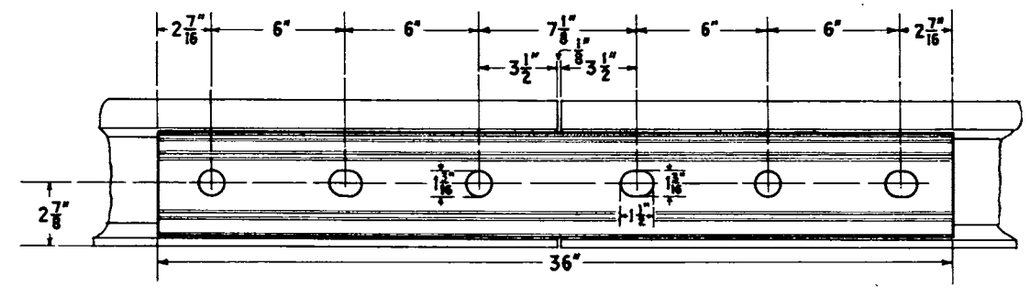
Approved: Vice President, Operations

Dwg. Nº C-1402.0

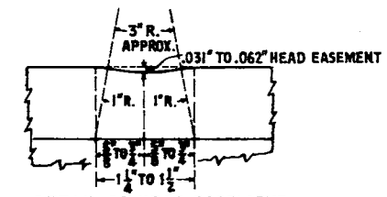
NOTE: TO BE USED WITH 112 LB. WELDED RAIL.

SPECIFICATIONS: A.R.E.A. SPECIFICATIONS FOR HIGH CARBON STEEL JOINT BARS.

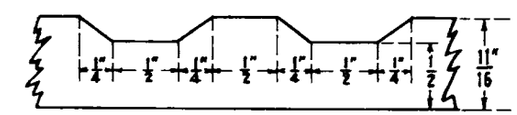




ELEVATION



DETAIL OF HEAD EASEMENT



SECTION OF WEB

JOINT

MOMENT OF INERTIA	23.0
SECTION MODULUS TOE	10.5
" " BTM.	9.6

BAR

GROSS WEIGHT		53.65 LBS
MAX. AREA	SQ. IN.	5.45
MIN. "	" "	5.07
AVG. "	" "	5.26

BURLINGTON NORTHERN INC.

STANDARD PLAN

TOELESS HEADFREE JOINT BAR FOR R.E. 115 LB. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973.

Recommended

F. A. Kempe

Director Track Engineering

Approved

D. M. Rountgen

Vice President, Operations

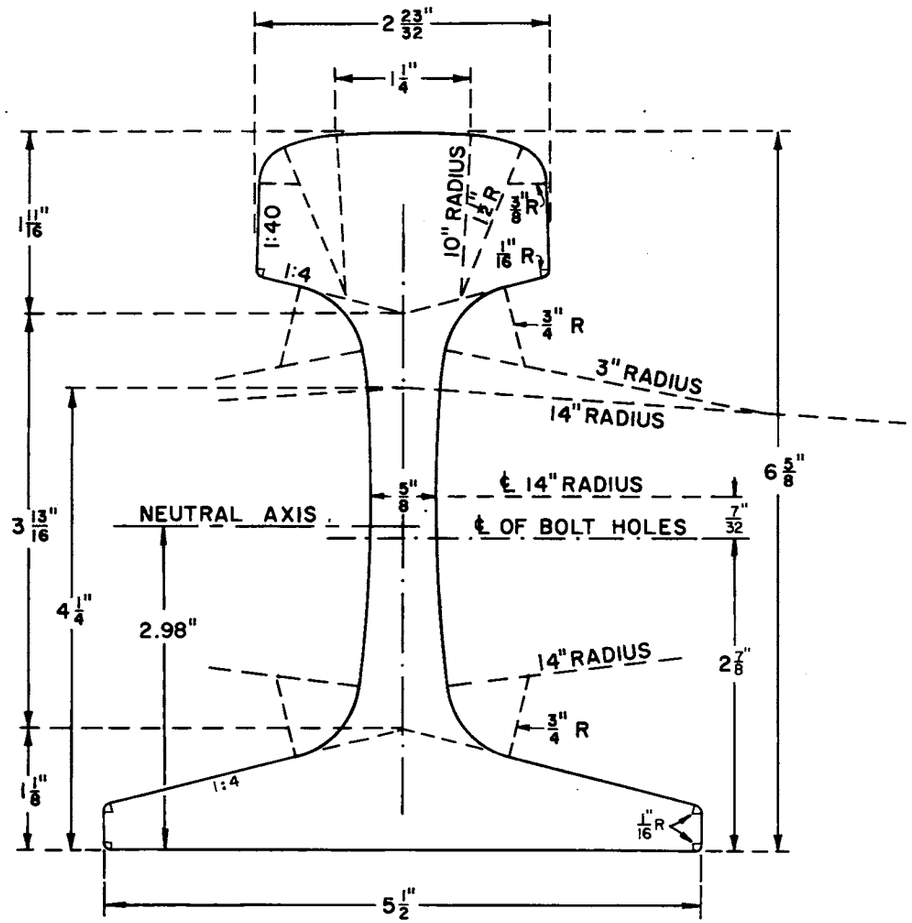
R. H. Judson

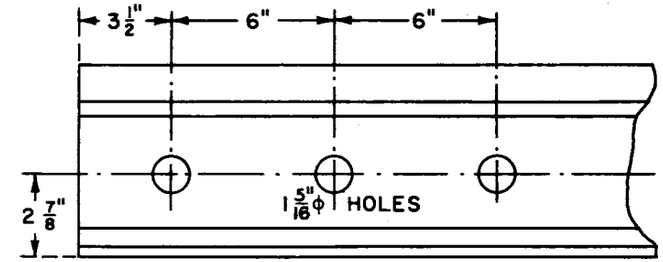
Asst. Vice President Engineering

Dwg. Nº C-1401.1

RAIL JOINT CO. TEMPLATE 115T4

THIS PLAN SUPERSEDES PLAN NO. C-1401.0





DRILLING FOR R.E. 115 LB. RAIL

PROPERTIES

AREA OF HEAD	3.91 SQ. IN.	34.8%
AREA OF WEB	3.05 SQ. IN.	27.1%
AREA OF BASE	4.29 SQ. IN.	38.1%
TOTAL AREA	11.25 SQ. IN.	100.0%
MOMENT OF INERTIA	65.6	
SECTION MODULUS, HEAD	18.0	
SECTION MODULUS, BASE	22.0	

WEIGHT 114.7 LBS. PER YARD

BURLINGTON NORTHERN INC.
STANDARD PLAN

R.E. 115 LB. RAIL

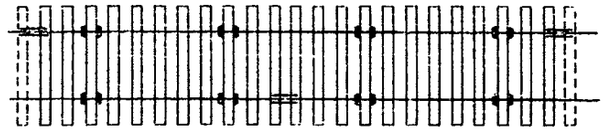
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973

Recommended: B.H. Anderson, Asst. Vice President Engineering

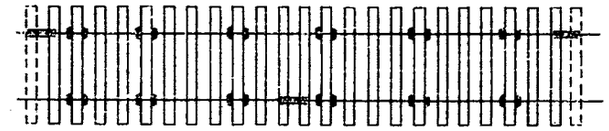
Approved: D.M. Rosenfeld, Vice President, Operations

Dwg. № C-1301.1

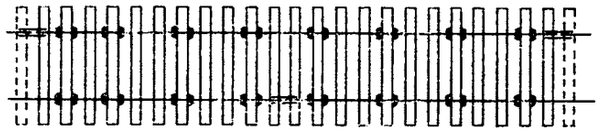
THIS PLAN SUPERSEDES PLAN NO. C-1301.0



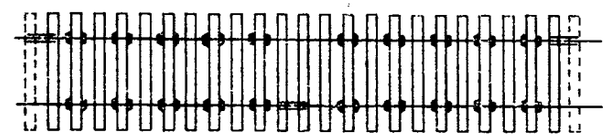
PLAN Nº 1
16 ANCHORS PER PANEL



PLAN Nº 2
24 ANCHORS PER PANEL



PLAN Nº 3
32 ANCHORS PER PANEL



PLAN Nº 4
40 ANCHORS PER PANEL

NOTE: DOUBLE TRACK SHALL BE ANCHORED PER PLAN Nº 3.

NOTE: THIS PLAN IS INTENDED TO SHOW PLACEMENT OF ANCHORS. NUMBER OF ANCHORS PER PANEL SHALL BE SPECIFIED BY ASST. VICE PRESIDENT ENGINEERING.

BURLINGTON NORTHERN INC.
STANDARD PLAN

METHOD OF ANCHORING TRACK WITH 39 FOOT PANELS

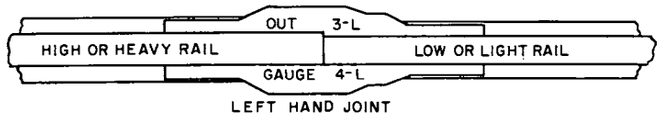
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended
B. H. Anderson
Asst. Vice President Engineering

Approved
J. B. Hinington
Vice President, Operations

Revised 4-75, 1-81
THIS PLAN SUPERSEDES PLAN NO. C-1350.1

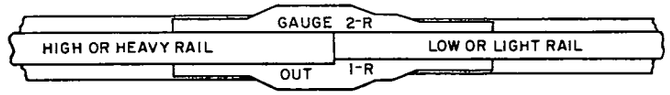
Dwg. Nº C-1350.2



LEFT HAND JOINT

CENTER LINE OF TRACK

RIGHT HAND JOINT

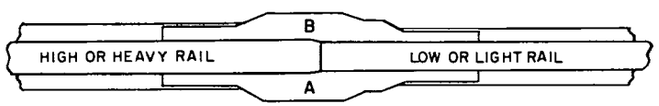


NOTE:

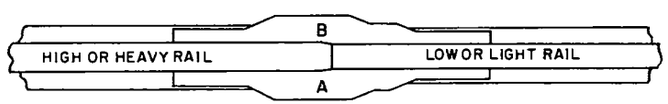
TO DETERMINE A RIGHT HAND OR LEFT HAND JOINT.
STAND IN TRACK AND FACE JOINT WHEN HEAVY OR HIGH RAIL IS ON RIGHT IT IS A RIGHT HAND JOINT.
WHEN HEAVY OR HIGH RAIL IS ON LEFT, IT IS A LEFT HAND JOINT.
IN SKETCH ABOVE, NUMBERS 1 & 2 FORM A RIGHT HAND JOINT AND
NUMBERS 3 & 4 FORM A LEFT HAND JOINT.
ONE RIGHT AND ONE LEFT HAND JOINT FORM A SET.
THE INSIDE BARS (2 AND 4) ARE MARKED "GAUGE" AND THE OUTSIDE BARS (1 AND 3) ARE MARKED "OUT"
BE SURE TO ASSEMBLE IN TRACK ACCORDINGLY.

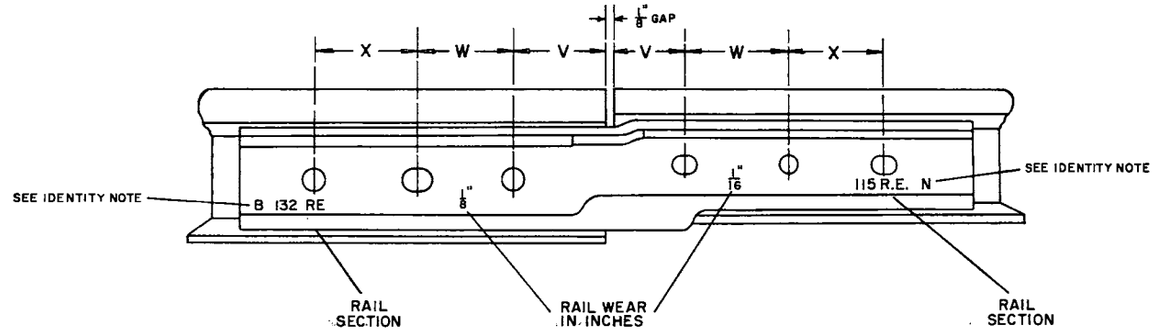
FOR COMBINATIONS OF RAILS WHERE DIFFERENCE IN WIDTHS AT GAGE LINE DO NOT EXCEED 1/16" CENTER LINES MAYBE CONSIDERED AS CONTINUOUS, THUS MAKING IT POSSIBLE TO USE A TWO PATTERN JOINT DESIGNATED AS "A"&"B" BARS.

ORDER COMPROMISE JOINTS BY BAR NUMBER AS SHOWN ON FOLLOWING SHEETS C-1404.0 O-2, Q-3, N-2, N-3 ETC. ALL ORDERS MUST SPECIFY AMOUNT OF HEAD WEAR FOR EACH RAIL.



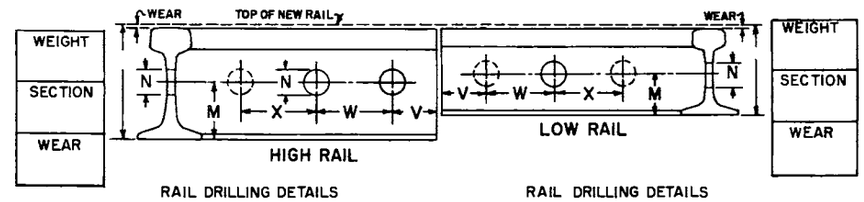
CENTER LINE OF TRACK





IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B.N. INC.
Q = C.B. & Q. RR.
N = N.P. RY.
G = G.N. RY.
S = S.P. & S. RY.



RAIL DRILLING DETAILS

DIAMETER OF HOLE IN RAIL	BASE OF RAIL TO ℄ OF RAIL DRILLING	CENTER 2nd TO CENTER 3rd HOLE	CENTER 1st TO CENTER 2nd HOLE	END OF RAIL TO CENTER 1st HOLE
N	M	X	W	V

RAIL DRILLING DETAILS

END OF RAIL TO CENTER 1st HOLE	CENTER 1st TO CENTER 2nd HOLE	CENTER 2nd TO CENTER 3rd HOLE	BASE OF RAIL TO ℄ OF RAIL DRILLING	DIAMETER OF HOLE IN RAIL
V	W	X	M	N

BOLT DIAMETER _____

BOLT DIAMETER _____

BURLINGTON NORTHERN INC.
STANDARD PLAN

MARKING AND GENERAL REQUIREMENTS

COMPROMISE JOINTS

ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1974

Recommended
B. H. Anderson
Asst. Vice President Engineering

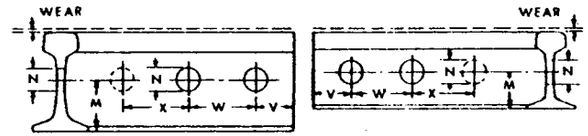
Approved
H. B. Livingston
Vice President, Operations

Dwg. Nº C-1404.1

Sheet 1

THIS PLAN SUPERSEDES PLAN NO. C-1404.0 Sheet 1

RAIL DRILLING DETAILS



HIGH RAIL

LOW RAIL

IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B.N.INC.
G = G.N.RY.
N = N.P.RY.
Q = C.B.&Q. RR.
S = S.P.&S. RY.

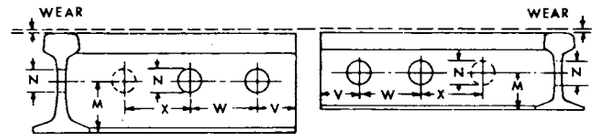
NOTE:
WEAR FACTOR = ZERO INCHES

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	N DIAMETER OF HOLE IN RAIL	M BASE RAIL TO ℄ OF RAIL DRILLING	X CENTER 2nd TO CENTER 3rd HOLE	W CENTER 1st TO CENTER 2nd HOLE	V END OF RAIL TO CENTER 1st HOLE	V END OF RAIL TO CENTER 1st HOLE	W CENTER 1st TO CENTER 2nd HOLE	X CENTER 2nd TO CENTER 3rd HOLE	M BASE RAIL TO ℄ OF RAIL DRILLING	N DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	1R-2R	A & B
	Q	ASCE	75	7/8"	1 1/8"	2 7/64"	—	5"	2 3/8"	3 3/8"	5 1/2"	—	1 13/16"	7/8"	3/4"	66	OP	Q	Q75 66Q-1			01-601-02209
	"	"	"	"	"	"	—	"	"	2 3/8"	5"	—	1 27/32"	1 1/8"	7/8"	65	ASCE	"	Q75 65Q-1			01-601-02161
	"	"	"	"	"	"	—	"	"	2 7/16"	"	—	1 3/4"	7/8"	3/4"	60	K.&W	"	Q75 60Q-1	01-601-02129	01-601-02102	
	"	"	"	"	"	"	—	"	"	3 1/8"	"	—	1 43/64"	"	"	56	C.B&Q.	"	Q75 56Q-1	01-601-02006	01-601-01855	
	"	OP	66	3/4"	7/8"	1 13/16"	—	5 1/2"	3 3/8"	2 3/8"	"	—	1 27/32"	1 1/8"	7/8"	65	ASCE	"	Q66 65Q-1			01-601-01951
	"	"	"	"	"	"	—	"	"	3 1/8"	"	—	1 43/64"	7/8"	3/4"	56	C.B&Q.	"	Q66 56Q-1			01-601-01759
	"	ASCE	65	7/8"	1 1/8"	1 27/32"	—	5"	2 3/8"	2 7/16"	"	—	1 3/4	"	"	60	K.&W.	"	Q65 60Q-1			01-601-01708
	"	"	"	"	"	"	—	"	"	3 1/8"	"	—	1 43/64"	"	"	56	C.B&Q.	"	Q65 56Q-1			01-601-01556
For new order BN Comp. Jt. B115 112B-3	BN	R.E.	115	1 1/8"	1 5/16"	2 7/8"	6"	6"	3 1/2"	2 1/2"	6 1/2"	—	2 3/8"	1 1/8"	1"	112	TR	"	Q115 112Q-1	01-601-03519	01-601-03527	
For new order BN Comp. Jt. B115 112B-1	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	R.E.	"	Q115 112Q-2			01-601-03498
For new order BN Comp. Jt. B115 100Q-1	"	"	"	"	"	"	"	"	"	2 15/32"	5"	—	2 5/8"	1 3/16"	"	100	R.A.	"	Q115 100Q-1			01-601-03455
For new order BN Comp. Jt. B115 90Q-1	"	"	"	"	"		"	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q115 90Q-1	01-601-03412	01-601-03404	

Revised Jan. 1980
This plan supersedes plan no. C-1404.2 Sh 0-4

C-1404.3 Sh 0-4

RAIL DRILLING DETAILS



HIGH RAIL LOW RAIL

IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B N INC.
G = G.N. RY.
N = N.P. RY.
Q = C.B & Q RR
S = S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

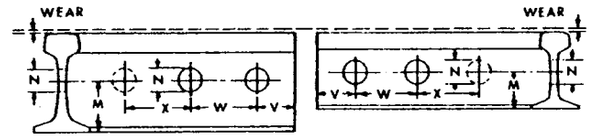
REMARKS	RR	SECTION	WEIGHT	BOLT DIA	DIAMETER OF HOLE IN RAIL	BASE RAIL TO ℄ OF RAIL DRILLING	CENTER 2nd TO CENTER 3rd HOLE	CENTER 1st TO CENTER 2nd HOLE	END OF RAIL TO CENTER 1st HOLE
	B	RE	136	1 1/8"	1 5/16"	3 3/32"	6"	6"	3 1/2"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	B	"	132	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	131	"	"	"	—	6 1/2"	2 1/2"
	"	"	"	"	"	"	—	"	"

END OF RAIL TO CENTER 1st HOLE	CENTER 1st TO CENTER 2nd HOLE	CENTER 2nd TO CENTER 3rd HOLE	BASE RAIL TO ℄ OF RAIL DRILLING	DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	1R-2R	A & B
3 1/2	6"	6"	3 3/32"	1 5/16"	1 1/8"	132	RE	B	B136 132B-1			01-404-14504
2 1/2"	6 1/2"	6 1/2"	"	"	"	131	"	"	B136 131B-1			01-404-14491
"	"	"	3 1/4"	"	"	129	TR	"	B136 129B-1	01-404-14467	01-404-14475	
3 1/2"	6"	6"	2 7/8"	"	"	115	RE	"	B136 115B-1	01-404-14440	01-404-14459	
2 1/2"	6 1/2"	6 1/2"	"	"	"	112	TR	"	B136 112B-1	01-404-14205	01-404-14221	
"	"	"	"	"	"	"	RE	"	B136 112B-2	01-404-14168	01-404-14184	
2 1/2"	6 1/2"	6 1/2"	3 3/32"	1 1/8"	1"	131	RE	Q	B132 131Q-1			01-601-03906
3 1/2"	6"	6"	3"	1 5/16"	1 1/8"	133	"	UP	B132 133U-1			01-404-13886
2 1/2"	6 1/2"	6 1/2"	3 3/32"	"	"	131	RE	B	B132 131B-1			01-404-13755
"	"	—	"	"	"	"	"	"	B132 131B-2			01-404-13771
"	"	6 1/2"	3 1/4"	"	"	129	TR	B	B132 129B-1	01-404-13325	01-404-13333	
"	"	"	"	1 3/16"	1"	"	"	Q	B132 129Q-1	01-404-13405	01-404-13421	
3 1/2"	6"	6"	2 7/8"	1 5/16"	1 1/8"	115	RE	B	B132 115B-1	01-404-12808	01-404-12824	
2 1/2"	6 1/2"	6 1/2"	"	"	"	112	"	"	B132 112B-1	01-404-12402	01-404-12429	
"	"	—	"	"	"	"	"	"	B132 112B-2	01-404-12445	01-404-12461	
"	"	6 1/2"	"	"	"	"	TR	"	B132 112B-3	01-404-12648	01-404-12664	
"	"	—	"	1 1/8"	1"	"	"	Q	B132 112Q-1	01-404-12605	01-404-12621	
2 15/32"	5"	—	2 5/8"	1 3/16"	"	100	RA	"	B132 100Q-1	01-404-11602	01-404-11629	
2 11/16"	5 1/2"	—	2 11/16"	1 1/4"	1 1/16"	"	RE	N	B132 100N-1	01-404-11506	01-404-11522	
2 15/32"	5"	—	2 29/64"	1 3/16"	1"	90	RA	Q	B132 90Q-1	01-404-11303	01-404-1132X	
2 7/16"	6"	—	2 11/32"	1 1/4"	1 1/16"	"	RB	N	B132 90N-1	01-404-11207	01-404-11223	
3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	"	B132 85N-1	01-404-10802	01-404-10829	
2 15/32	5"	—	2 9/64"	1 3/16"	1"	"	Q	Q	B132 85Q-1	01-404-10909	01-404-10925	
3 1/2"	6"	6"	2 7/8"	1 5/16"	1 1/8"	115	RE	B	B131 115B-1	01-404-10407	01-404-10423	
2 1/2"	6 1/2"	—	"	"	"	112	"	"	B131 112B-1	01-404-10300	01-404-10327	

Revised 1-80, 6-80

This plan supersedes plan no. C-1404.3 Sh. B-1

RAIL DRILLING DETAILS



HIGH RAIL

LOW RAIL

IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B N INC
G = G.N. RY.
N = N.P. RY.
Q = C.B. & Q RR.
S = S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

	RR	SECTION	WEIGHT	BOLT DIA	DIAMETER OF HOLE IN RAIL	BASE RAIL TO ℄ OF RAIL DRILLING	CENTER 2nd TO CENTER 3rd HOLE	CENTER 1st TO CENTER 2nd HOLE	END OF RAIL TO CENTER 1st HOLE
	B	RE	115	1 1/8	1 5/16	2 7/8	6"	6"	3 1/2"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	"	"	"	"	"	"	"
	"	"	112	"	1 5/16"	2 7/8"	—	6 1/2"	2 1/2"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"

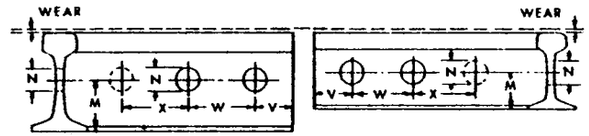
	END OF RAIL TO CENTER 1st HOLE	CENTER 1st TO CENTER 2nd HOLE	CENTER 2nd TO CENTER 3rd HOLE	BASE RAIL TO ℄ OF RAIL DRILLING	DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	1R-2R	A & B
	2 1/2"	6 1/2"	6 1/2"	2 7/8"	1 5/16"	1 1/8"	112	RE	B	B115 112B-1			01-404-08753
	"	"	—	"	"	"	"	"	"	B115 112B-2			01-404-08761
	"	"	6 1/2"	"	"	"	"	TR	"	B115 112B-3	01-404-08825	01-404-08841	
	"	"	"	"	1 1/8"	1"	"	"	Q	B115 112Q-1	01-404-08905	01-404-08921	
	2 15/32"	5"	—	2 45/64"	1 3/16"	"	110	RE	"	B115 110Q-1			01-404-08454
	"	"	—	2 5/8"	"	"	100	RA	"	B115 100Q-1			01-404-08155
	2 11/16"	5 1/2"	—	2 11/16"	1 1/4"	1 1/16"	"	RE	N	B115 100N-1			01-404-07953
	2 15/32"	5"	—	2 29/64"	1 3/16"	1"	90	RA	Q	B115 90Q-1	01-404-0770X	01-404-07726	
	2 7/16"	6"	—	2 11/32"	1 1/4"	1 1/16"	"	RB	N	B115 90N-1	01-404-07603	01-404-0762X	
	"	"	—	2 7/16"	1 3/16"	"	"	GN	G	B115 90G-1	01-404-07507	01-404-07523	
	3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	N	B115 85N-1			01-404-07152
	2 15/32"	5"	—	2 9/64"	1 3/16"	1	"	CB&Q	Q	B115 85Q-1			01-404-07259
	3 1/2"	6"	6"	3"	1 5/16"	1 1/8"	133	RE	UP	B112 133U-1	01-404-14045	01-404-14061	
	2 7/16"	7"		"	1 3/16"	1 1/16"	110	GN	G	B112 110G-1			01-404-06758
	2 15/32"	5"	—	2 5/8"	"	1"	100	RA	Q	B112 100Q-1			01-404-05958
	2 11/16"	5 1/2"	—	2 11/16"	1 1/4"	1 1/16"	"	RE	N	B112 100N-1			01-404-06053
	2 15/32"	5"	—	2 29/64"	1 3/16"	1"	90	RA	Q	B112 90Q-1	01-404-05704	01-404-05720	
	2 7/16"	6"	—	2 11/32"	1 1/4"	1 1/16"	"	RB	N	B112 90N-1	01-404-05608	01-404-05624	
	"	"	—	2 7/16"	1 3/16"	"	"	GN	G	B112 90G-1	01-404-05501	01-404-05528	
	2 15/32"	5"	—	2 9/64"	"	1"	85	CB&Q	Q	B112 85Q-1			01-404-05253
	3"	6"	—	2 17/64"	1 1/8"	7/8"	"	ASCE	N	B112 85N-1			01-404-05157

Revised Jan 1980

This plan supersedes plan no. C-1404.0 Sh. B-2

C-1404.1 Sh. B-2

RAIL DRILLING DETAILS



IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B.N. INC.
G = G.N. RY.
N = N.P. RY.
Q = C.B. & Q.
S = S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

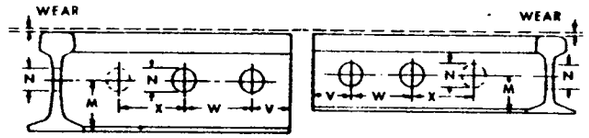
					HIGH RAIL					LOW RAIL												
					N	M	X	W	V	V	W	X	M	N							CODED IN PAIRS	
REMARKS	RR	SECTION	WEIGHT	BOLT DIA	DIAMETER OF HOLE IN RAIL	BASE RAIL TO ℄ OF RAIL DRILLING	CENTER 2nd TO CENTER 3rd HOLE	CENTER 1st TO CENTER 2nd HOLE	END OF RAIL TO CENTER 1st HOLE	END OF RAIL TO CENTER 1st HOLE	CENTER 1st TO CENTER 2nd HOLE	CENTER 2nd TO CENTER 3rd HOLE	BASE RAIL TO ℄ OF RAIL DRILLING	DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	3L-4L	1R-2R	A & B
	G	Penn.	155	1 1/8"	1 5/16"	3 3/8"	7"	6"	2 23/32"	3 1/2"	6"	6"	3 3/32"	1 7/16"	1 1/8"	132	R.E.	G	G155 132G-1	01-234-2281X	01-234-22852	
	"	R.E.	132	"	"	3 3/32"	6"	"	3 1/2"	2 21/32"	7 1/2"	—	2 3/4"	"	"	130	Penn.	"	G132 130G-1	01-234-22668	01-234-22705	
	"	"	"	"	"	"	"	"	"	3 1/2"	6"	6"	2 7/8"	1 1/4"	1 1/16"	115	R.E.	"	G132 115G-1	01-234-22633	01-234-22641	
	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	"	"	"	112	"	"	G132 112G-1	01-234-22596	01-234-22617	
	"	"	131	"	"	"	—	6 1/2"	2 1/2"	2 21/32"	7 1/2"	—	2 3/4"	1 5/16"	1 1/8"	130	Penn.	"	G131 130G-1	01-234-22510	01-234-22553	
	"	"	"	"	"	"	—	"	"	3 1/2"	6"	6"	2 7/8"	1 1/4"	1 1/16"	115	R.E.	"	G131 115G-1	01-234-22019	01-234-22051	
	"	"	"	"	"	"	—	"	"	2 1/2"	6 1/2"	—	"	"	"	112	"	"	G131 112G-1	01-234-21518	01-234-21550	
	"	"	"	"	"	"	—	"	"	2 7/16"	7"	—	3"	1 3/16"	"	110	GN	"	G131 110G-1	01-234-21016	01-234-21059	
	"	"	"	"	"	"	—	"	"	"	"	—	2 5/8"	"	"	100	"	"	G131 100G-1	01-234-20515	01-234-20558	
	"	"	"	"	"	"	—	"	"	"	6"	—	2 7/16"	"	"	90	"	"	G131 90G-1	01-234-20267	01-234-20304	
	"	Penn.	130	"	"	2 3/4"	—	7 1/2"	2 21/32"	3 1/2"	"	6"	2 7/8"	1 1/4"	"	115	R.E	"	G130 115G-1	01-234-20013	01-234-20056	
	"	"	"	"	"	"	—	"	"	2 1/2"	6 1/2"	—	"	"	"	112	"	"	G130 112G-1	01-234-19610	01-234-19653	
	"	"	"	"	"	"	—	"	"	2 7/16"	7"	—	3"	1 3/16"	"	110	GN	"	G130 110G-1	01-234-19514	01-234-19557	
	"	"	"	"	"	"	—	"	"	"	"	—	2 5/8"	"	"	100	"	"	G130 100G-1	01-234-19012	01-234-19055	
	"	"	"	"	"	"	—	"	"	"	6"	—	2 7/16"	"	"	90	"	"	G130 90G-1	01-234-18765	01-234-18802	
	"	R.E.	115	1 1/16"	1 1/4"	2 7/8"	6"	6"	3 1/2	2 1/2"	6 1/2"	—	2 7/8"	1 1/4"	"	112	R.E	"	G115 112G-1	01-234-18511	01-234-18554	
	"	"	"	"	"	"	"	"	"	2 7/16"	7"	—	3"	1 3/16"	"	110	GN	"	G115 110G-1	01-234-1801X	01-234-18052	
	"	"	"	"	"	"	"	"	"	"	"	—	2 5/8"	"	"	100	"	"	G115 100G-1	01-234-17519	01-234-17551	
	"	"	"	"	"	"	"	"	"	"	6"	—	2 7/16"	"	"	90	"	"	G115 90G-1	01-234-17017	01-234-1705X	
	"	"	"	"	"	"	"	"	"	"	5"	—	2 11/64"	1 1/16"	15/16"	85	"	"	G115 85G-1	01-234-1676X	01-234-16807	
	"	"	112	"	"	"	—	6 1/2"	2 1/2"	"	7"	—	3"	1 3/16"	1 1/16"	110	"	"	G112 110G-1	01-234-16516	01-234-16559	
	"	"	"	"	"	"	—	"	"	"	"	—	2 5/8	"	"	100	"	"	G112 100G-1	01-234-16217	01-234-1625X	
	"	"	"	"	"	"	—	"	"	"	6"	—	2 7/16"	"	"	90	"	"	G112 90G-1	01-234-16014	01-234-16057	
	"	"	"	"	"	"	—	"	"	"	5	—	2 11/64"	1 1/16"	15/16"	85	"	"	G112 85G-1	01-234-15812	01-234-15855	
	"	GN	110	"	1 3/16"	3"	—	7"	2 7/16	"	7"	—	2 5/8"	1 3/16"	1 1/16"	100	"	"	G110 100G-1	01-234-15513	01-234-15556	
	"	"	"	"	"	"	—	"	"	"	6"	—	2 7/16"	"	"	90	"	"	G110 90G-1	01-234-15011	01-234-15054	

Revised Jan 1980

This plan supersedes plan no. C-1404.0 Sh G-2

C-1404.1 Sh G-2

RAIL DRILLING DETAILS



IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B.R. INC.
G = G.N. RY.
N = N.P. RY.
Q = C.B. & Q RR
S = S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	HIGH RAIL N: DIAMETER OF HOLE IN RAIL	HIGH RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	HIGH RAIL X: CENTER 2nd TO CENTER 3rd HOLE	HIGH RAIL W: CENTER 1st TO CENTER 2nd HOLE	HIGH RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL W: CENTER 1st TO CENTER 2nd HOLE	LOW RAIL X: CENTER 2nd TO CENTER 3rd HOLE	LOW RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	LOW RAIL N: DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER		CODED IN PAIRS 3L-4L	CODED IN PAIRS 1R-2R	CODED IN PAIRS A & B
	G	GN	110	1 1/16"	1 3/16"	3"	—	7"	2 7/16"	2 1/8"	4 1/2"	—	2 9/64"	1"	13/16"	80/04	GN	G	G110	80G-1	01-234-14764	01-234-14801	
	"	"	100	"	"	2 5/8"	—	"	"	2 7/16"	6"	—	2 7/16"	1 3/16"	1 1/16"	90	"	"	G100	90G-1	01-234-14510	01-234-14553	
	"	"	"	"	"	"	—	"	"	"	5"	—	2 11/64"	1 1/16"	15/16"	85	"	"	G100	85G-1	01-234-14019	01-234-14051	
	"	"	"	"	"	"	—	"	"	2 1/8"	4 1/2"	—	2 9/64"	1"	13/16"	80/04	"	"	G100	80G-1	01-234-13761	01-234-13809	
	"	"	90	"	"	2 7/16"	—	6	"	2 7/16"	6"	—	2 11/32"	1 1/4"	1 1/16"	90	RB	NP	G90	90N-1			01-234-13649
	"	"	"	"	"	"	—	"	"	"	5"	—	2 11/64"	1 1/16"	15/16"	85	GN	GN	G90	85G-1	01-234-13518	01-234-13550	
	"	"	"	"	"	"	—	"	"	2 1/8"	4 1/2"	—	2 9/64"	1"	13/16"	80/04	"	"	G90	80G-1	01-234-13016	01-234-13059	
	"	"	"	"	"	"	—	"	"	2 7/16"	5"	—	2 3/64"	"	"	70	ASCE	"	G90	70G-1	01-234-12910	01-234-12953	
	"	"	"	"	"	"	—	"	"	2 1/8"	4 1/2"	7"	1 27/32"	"	"	68	GN	"	G90	68G-1	01-234-12865	01-234-12881	
	"	"	85	15/16"	1 1/16"	2 11/64"	—	5"	"	2 7/16"	5"	—	2 3/64"	"	"	70	ASCE	"	G85	70G-1			
	"	"	80/04	13/16"	1"	2 9/64"	—	4 1/2"	2 1/8"	2 1/8"	4 1/2"	7"	1 27/32"	"	"	75/87	ST. P M & M. RY.	"	G80	75G-1	01-234-12515	01-234-12558	
	"	"	"	"	"	"	—	"	"	2 7/16"	5"	—	2 3/64"	"	"	70	ASCE	"	G80	70G-1	01-234-12013	01-234-12056	
	"	"	"	"	"	"	—	"	"	2 1/8"	4 1/2"	—	1 49/64"	"	"	60	ST. P M & M. RY.	"	G80	60G-1	01-234-11512	01-234-11555	
	"	ST. P. M. & M. RY.	75/87	"	"	1 27/32"	—	"	"	"	"	—	"	"	"	"	"	"	G75	60G-1	01-234-11010	01-234-11053	

Revised Jan 1930

This plan supersedes plan no. C-1404.0 Sh. G-3

C-1404.1 Sh G-3

RAIL DRILLING DETAILS

IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

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N = N.P. RY.
Q = C.B. & Q. RR
S = S.P. & S. RY.

NOTE:
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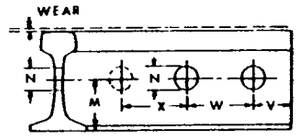
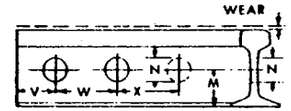




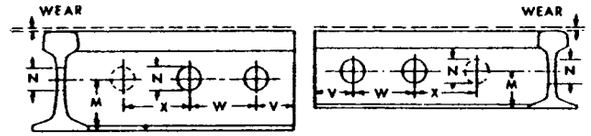
REMARKS	RR	SECTION	WEIGHT	BOLT DIA	HIGH RAIL N: DIAMETER OF HOLE IN RAIL	HIGH RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	HIGH RAIL X: CENTER 2nd TO CENTER 3rd HOLE	HIGH RAIL W: CENTER 1st TO CENTER 2nd HOLE	HIGH RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL W: CENTER 1st TO CENTER 2nd HOLE	LOW RAIL X: CENTER 2nd TO CENTER 3rd HOLE	LOW RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	LOW RAIL N: DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	CODED IN PAIRS 1R-2R	CODED IN PAIRS A & B
	Q	R.E.	136	1"	1 1/8"	3 3/32"	6"	6"	3 1/2"	2 1/2"	6 1/2"	6 1/2"	3 3/32"	1 1/8"	1"	131	R.E	Q	Q136 131Q-1			01-601-04407
	"	"	"	"	"	"	"	"	"	"	"	"	3 1/4"	1 3/16"	"	129	T.R.	"	Q136 129Q-1	01-601-04327	01-601-04300	
	"	"	"	"	"	"	"	"	"	"	"	"	2 7/8"	1 1/8"	"	112	"	"	Q136 112Q-1	01-601-04220	01-601-04204	
	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	R.E.	"	Q136 112Q-2	01-601-04167	01-601-04140	
	"	"	"	"	"	"	"	"	"	2 15/32"	5"	—	2 29/64"	1 3/16"	"	90	R.A.	"	Q136 90Q-1	01-601-04087	01-601-04060	
	"	"	"	"	"	"	"	"	"	"	"	—	2 9/64"	"	"	85	C.B.&Q.	"	Q136 85Q-1	01-601-04028	01-601-04001	
	"	"	"	"	"	"	"	"	"	3 1/2"	6"	6"	3 3/32"	1 5/16"	1 1/8"	132	R.E.	B	Q136 132B-1			01-601-04503
	"	"	"	"	"	"	"	"	"	"	"	"	2 7/8"	1 1/4"	1"	115	"	Q	Q136 115Q-1	01-601-04271	01-601-04255	
	Q	E	132	1"	1 3/16"	3 3/32"	6"	6"	3 1/4"	2 1/2"	6 1/2"	6 1/2"	3 1/4"	1 1/4"	1"	129	T.R.	"	Q132 129Q-1	01-601-03981	01-601-0399X	
	"	"	"	"	"	"	"	"	"	"	"	—	2 7/8"	1 1/8"	"	112	R.E.	"	Q 132 112 Q-1	01-601-03965	01-601-03973	
	"	"	131	"	1 1/8"	"	6 1/2"	6 1/2"	2 1/2"	2 1/2"	6 1/2"	6 1/2"	3 1/4"	1 3/16"	"	129	T.R.	"	Q131 129Q-1	01-601-03949	01-601-03922	
	"	"	"	"	"	"	"	"	"	"	"	—	2 7/8"	1 1/8"	"	112	"	"	Q131 112Q-1	01-601-03885	01-601-03869	
	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	R.E	"	Q131 112Q-2	01-601-03826	01-601-0380X	
	"	"	"	"	"	"	"	"	"	2 15/32"	5"	—	2 45/64"	1 3/16"	"	110	"	"	Q131 110Q-1	01-601-03762	01-601-03746	
	"	"	"	"	"	"	"	"	"	"	"	—	2 5/8"	"	"	100	R.A.	"	Q131 100Q-1	01-601-03703	01-601-03711	
	"	"	"	"	"	"	"	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q131 90Q-1	01-601-0364X	01-601-03623	
	"	TR	129	"	1 3/16"	3 1/4"	"	"	"	3 1/2"	6"	6"	2 7/8"	"	"	115	R.E.	"	Q129 115Q-1			01-601-03594
	"	"	"	"	"	"	"	"	"	"	"	"	"	1 5/16"	1 1/8"	"	"	B	Q129 115B-1			01-404-09254
	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	"	1 1/8"	1"	112	T.R.	Q	Q129 112Q-1			01-601-03543
	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	R.E	"	Q129 112Q-2			01-601-03586
	"	"	"	"	"	"	"	"	"	2 15/32"	5"	—	2 45/64"	1 3/16"	"	110	"	"	Q129 110Q-1			01-601-03300
	"	"	"	"	"	"	"	"	"	"	"	—	2 5/8"	"	"	100	R.A.	"	Q129 100Q-1			01-601-03463
	"	"	"	"	"	"	"	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q129 90Q-1			01-601-03420
	"	"	112	"	1 1/8"	2 7/8"	—	"	"	2 1/2"	6 1/2"	—	2 7/8"	1 1/8"	"	112	R.E.	"	Q112 112Q-1	01-601-03383	01-601-03367	
	"	"	"	"	"	"	—	"	"	2 15/32"	5"	—	2 45/64"	1 3/16"	"	110	"	"	Q112 110Q-1	01-601-03324	01-601-03308	
	"	"	"	"	"	"	—	"	"	"	"	—	2 5/8"	"	"	100	R	"	Q112 100Q-1	01-601-03228	01-601-03201	
	"	"	"	"	"	"	—	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q112 90Q-1			01-601-03121
	"	"	"	"	"	"	—	"	"	"	"	—	2 9/64"	"	"	85	C.B.&Q	"	Q112 85Q-1			01-601-03025

Revised on 1980

This plan supersedes plan no C-1404.1 Sh. Q-2

C-1404.2 Sh Q-2

RAIL DRILLING DETAILS



IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

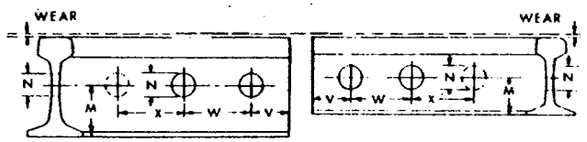
B B.N. INC.
G G.N.RY.
N N.P. RY.
Q C.B.&Q. RR.
S S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	HIGH RAIL N: DIAMETER OF HOLE IN RAIL	HIGH RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	HIGH RAIL X: CENTER 2nd TO CENTER 3rd HOLE	HIGH RAIL W: CENTER 1st TO CENTER 2nd HOLE	HIGH RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL W: CENTER 1st TO CENTER 2nd HOLE	LOW RAIL X: CENTER 2nd TO CENTER 3rd HOLE	LOW RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	LOW RAIL N: DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	CODED IN PAIRS 1R-2R	CODED IN PAIRS A&B
	Q	R.E.	112	1"	1 1/8"	2 7/8"	—	6 1/2"	2 1/2"	2 15/32"	5"	—	2 45/64"	1 3/16"	1"	110	R.E.	Q	Q112 110Q-2			01-601-03260
	"	"	"	"	"	"	—	"	"	"	"	—	2 5/8"	"	"	100	R.A.	"	Q112 100Q-2			01-601-03164
	"	"	"	"	"	"	—	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q112 90Q-2	01-601-03084	01-601-03068	
	"	"	"	"	"	"	—	"	"	"	"	—	2 9/64"	"	"	85	C.B.&Q.	"	Q112 85Q-2	01-601-02989	01-601-02962	
	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	"	"	"	Q112 85Q-3			01-601-02954
	"		"	"	"	"	—	"	"	2 3/8"	"	—	2 7/64"	1 1/8"	7/8"	75	ASCE	"	Q112 75Q-1	01-601-02938	01-601-02946	
	"	"	110	"	1 3/16"	2 45/64"	—	5"	2 15/32"	2 15/32"	"	—	2 5/8"	1 3/16"	1"	100	R.A.	"	Q110 100Q-1			01-601-02807
	"	"	"	"	"	"	—	"	"	"	"	—	2 29/64"	"	"	90	"	"	Q110 90Q-1	01-601-0292X	01-601-02903	
	"	"	"	"	"	"	—	"	"	"	"	—	2 9/64"	"	"	85	C.B.&Q.	"	Q110 85Q-1			01-601-02866
	"	"	"	"	"	"	—	"	"	2 3/8"	"	—	2 7/64"	1 1/8"	7/8"	75	ASCE	"	Q110 75Q-1			
	"	R.A.	100	"	1 3/16"	2 5/8"	—	"	"	2 15/32"	5"	—	2 29/64"	1 3/16"	1"	90	R.A.	"	Q100 90Q-1	01-601-0276X	01-601-02743	
	"	"	"	"	"	"	—	"	"	"	"	—	2 9/64"	"	"	85	C.B.&Q.	"	Q100 85Q-1			01-601-02719
	"	"	"	"	"	"	—	"	"	2 3/8"	"	—	2 7/64"	1 1/8"	7/8"	75	ASCE	"	Q100 75Q-1	01-601-0268X	01-601-02655	
	"	"	90	"	"	2 29/64"	—	"	"	2 7/16"		—	2 7/16"	1 3/16"	1 1/16"	90	GN	GN	Q90 90G-1			01-601-02639
	"	"	"	"	"	"	—	"	"	2 15/32"	5"	—	2 9/64"	1 3/16"	1"	85	C.B.&Q	Q	Q90 85Q-1			01-601-02620
	"	"	"	"	"	"	—	"	"	2 3/8"	"	—	2 7/64"	1 1/8"	7/8"	75	ASCE	"	Q90 75Q-1	01-601-02612	01-601-02604	01-601-02591
	"	"	"	"	"	"	—	"	"	3 3/8"	5 1/2"	—	1 13/16"	7/8"	3/4"	66	OP	"	Q90 66Q-1			01-601-02567
	"	"	"	"	"	"	—	"	"	2 3/8"	5"	—	1 27/32"	1 1/8"	7/8"	65	ASCE	"	Q90 65Q-1	01-601-02532	01-601-02516	
	"	"	"	"	"	"	—	"	"	3 1/8"	"	—	1 43/64"	7/8"	3/4"	56	C.B.&Q.	"	Q90 56Q-1	01-601-02487	01-601-02460	
	"	C.B.&Q.	85	"	"	2 9/64"	—	"	"	2 3/8"	"	—	2 7/64"	1 1/8"	7/8"	75	ASCE	"	Q85 75Q-1			01-601-02436
	"	"	"	"	"	"	—	"	"	3 3/8"	5 1/2"	—	1 13/16"	7/8"	3/4"	66	OP	"	Q85 66Q-1	01-601-02401	01-601-02380	
	"	"	"	"	"	"	—	"	"	2 3/8	5"	—	1 27/32"	1 1/8"	7/8"	65	ASCE	"	Q85 65Q-1			01-601-02364
	"	"	"	"	"	"	—	"	"	2 7/16"	"	—	1 3/4"	7/8"	3/4"	60	K.&W.	"	Q85 60Q-1			
	"	"	"	"	"	"	—	"	"	3 1/8"	"	—	1 43/64"	"	"	56	C.B.&Q	"	Q85 56Q-1	01-601-02348	01-601-02305	

Revised Jan 1980
This plan supersedes plan no. C-14040 Sh.Q-3

RAIL DRILLING DETAILS



IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

B = B N INC.
G = G.N. RY.
N = N.P. RY.
O = C.B.&Q RR
S = S.P. & S. RY.

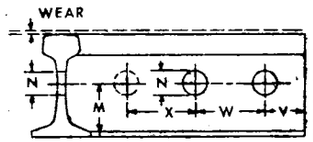
NOTE:
WEAR FACTOR = ZERO INCHES

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	HIGH RAIL N: DIAMETER OF HOLE IN RAIL	HIGH RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	HIGH RAIL X: CENTER 2nd TO CENTER 3rd HOLE	HIGH RAIL W: CENTER 1st TO CENTER 2nd HOLE	HIGH RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL V: END OF RAIL TO CENTER 1st HOLE	LOW RAIL W: CENTER 1st TO CENTER 2nd HOLE	LOW RAIL X: CENTER 2nd TO CENTER 3rd HOLE	LOW RAIL M: BASE RAIL TO ℄ OF RAIL DRILLING	LOW RAIL N: DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	CODED IN PAIRS 1R-2R	CODED IN PAIRS A & B
	N	RE	140	1 1/16"	1 1/4"	3	6"	6"	3 1/2"	3 1/2"	6	6	3 3/32"	1 5/16"	1 1/8"	132	RE	BN	N140 132B-1			01-750-39484
	"	"	"	"	"	"	"	"	"	"	"	"	2 7/8"	"	"	115	"	"	N140 115B-1	01-750-39409	01-750-39425	
	"	"	132	"	"	3 3/32"	"	"	"	2 1/2"	6 1/2"	6 1/2"	3 3/32"	1 1/4"	1 1/16"	131	R.E	N	N132 131N-1			01-750-39206
	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	N132 131N-2			01-750-39003
	"	"	"	"	"	"	"	"	"	2 11/16"	5 1/2"	—	3 1/16"	1 5/16"	1 1/8"	130	"	"	N132 130N-1			01-750-38801
	"	"	"	"	"	"	"	"	"	3 1/2"	6"	6"	2 7/8"	1 1/4"	1 1/16"	119	"	"	N132 119N-1	01-750-38721	01-750-38748	
	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	115	"	"	N132 115N-1	01-750-38609	01-750-3865X	
	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	"	"	"	"	"	"	N132 115N-2	01-750-38406	01-750-38457	
	"	"	"	"	"	"	"	"	"	"	"	—	"	"	"	112	"	"	N132 112N-1	01-750-38203	01-750-38254	
	"	"	"	"	"	"	"	"	"	2 11/16"	5 1/2"	—	2 11/16"	"	"	100	"	"	N132 100N-1	01-750-38000	01-750-38051	
	"	"	"	"	"	"	"	"	"	2 7/16"	6"	—	2 11/32"	"	"	90	R.B.	"	N132 90N-1	01-750-37809	01-750-3785X	
	"	"	"	"	"	"	"	"	"	3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	"	N132 85N-1	01-750-37606	01-750-37657	
	"	"	131	"	"	"	—	6 1/2"	2 1/2"	2 11/16"	5 1/2"	—	3 1/16"	1 5/16"	1 1/8"	130	R.E.	"	N131 130N-1			01-750-37403
	"	"	"	"	"	"	6 1/2"	"	"	3 1/2"	6"	6"	2 7/8"	1 1/4"	1 1/16"	115	"	"	N131 115N-1	01-750-37200	01-750-37251	
	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	"	"	"	"	"	"	N131 115N-2	01-750-37008	01-750-37059	
	"	"	"	"	"	"	—	"	"	3 1/2"	6"	6	"	"	"	"	"	"	N131 115N-3	01-750-36806	01-750-36857	
	"	"	"	"	"	"	—	"	"	2 1/2"	6 1/2"	—	"	"	"	"	"	"	N131 115N-4	01-750-36603	01-750-36654	
	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	112	"	"	N131 112N-1	01-750-36400	01-750-36451	
	"	"	"	"	"	"	—	"	"	2 11/16"	5 1/2"	—	2 11/16"	"	"	100	"	"	N131 100N-1	01-750-36208	01-750-36259	
	"	"	"	"	"	"	—	"	"	2 7/16"	6"	—	2 11/32"	"	"	90	R B.	"	N131 90N-1	01-750-36005	01-750-36056	
	"	"	"	"	"	"	—	"	"	3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	"	N131 85N-1	01-750-35803	01-750-35854	
	"	"	130	1 1/8"	1 1/16"	3 1/16"	—	5 1/2"	2 11/16"	3 1/2"	"	6"	2 7/8"	1 1/4"	1 1/16"	119	R E.	"	N130 119N-1			01-750-35600
	"	"	"	"	"	"	—	"	"	"	"	"	"	"	"	115	"	"	N130 115N-1	01-750-35408	01-750-35459	
	"	"	"	"	"	"	—	"	"	2 1/2"	6 1/2"	—	"	"	"	"	"	"	N130 115N-2	01-750-35205	01-750-35256	
	"	"	"	"	"	"	—	"	"	2 11/16"	5 1/2"	—	2 11/16"	"	"	100	"	"	N130 100N-1	01-750-35002	01-750-35053	
	"	"	"	"	"	"	—	"	"	2 7/16"	6"	—	2 11/32"	"	"	90	R.B	"	N130 90N-1	01-750-34907	01-750-34923	

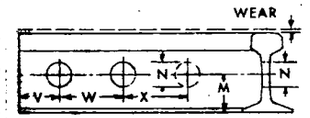
Revised Jan. 1980

This plan supersedes plan no. C-1404.0 Sh. N-2

RAIL DRILLING DETAILS



HIGH RAIL



LOW RAIL

IDENTIFICATION "LETTERS" SHOWING ORIGINAL PURCHASER OF RAIL

B = BN INC.
G = G.N. RY.
N = N.P. RY.
Q = C.B.&Q RR
S = S.P. & S. RY.

NOTE:
WEAR FACTOR = ZERO INCHES

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	N DIAMETER OF HOLE IN RAIL	M BASE RAIL TO ℄ OF RAIL DRILLING	X CENTER 2nd TO CENTER 3rd HOLE	W CENTER 1st TO CENTER 2nd HOLE	V END OF RAIL TO CENTER 1st HOLE	V END OF RAIL TO CENTER 1st HOLE	W CENTER 1st TO CENTER 2nd HOLE	X CENTER 2nd TO CENTER 3rd HOLE	M BASE RAIL TO ℄ OF RAIL DRILLING	N DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER		CODED IN PAIRS 3L-4L	1R-2R	A & B
	N	R.E	119	1 1/16"	1 1/4"	2 7/8"	6"	6"	3 1/2"	3 1/2"	6"	6"	2 7/8"	1 1/4"	1 1/16"	115	R.E.	N	N119	115N-1			01-750-34800
	"	"	"	"	"	"	"	"	"	2 1/2"	6 1/2"	—	"	"	"	112	"	"	N119	112N-1			01-750-34608
	"	"	115	"	"	"	"	"	"	"	"	—	"	"	"	"	"	"	N115	112N-1			01-750-34405
	"	"	"	"	"	"	—	6 1/2"	2 1/2"	"	"	—	"	"	"	"	"	"	N115	112N-2			01-750-34202
	"	"	"	"	"	"	6"	6"	3 1/2"	2 11/16"	5 1/2"	—	2 11/16"	"	"	100	"	"	N115	100N-1			01-750-3400X
	"	"	"	"	"	"	—	6 1/2"	2 1/2"	"	"	—	"	"	"	"	"	"	N115	100N-2			01-750-33808
	"	"	"	"	"	"	6"	6"	3 1/2"	2 7/16"	6"	—	2 11/32"	"	"	90	R.B.	"	N115	90N-1	01-750-33605	01-750-33656	
	"	"	"	"	"	"	—	6 1/2"	2 1/2"	"	"	—	"	"	"	"	"	"	N115	90N-2	01-750-33402	01-750-33483	
	"	"	"	"	"	"	6"	6"	3 1/2"	3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	"	N115	85N-1	01-750-3320X	01-750-33250	
	"	"	"	"	"	"	—	6 1/2"	2 1/2"	"	"	—	"	"	"	"	"	"	N115	85N-2	01-750-33007	01-750-33058	
	"	"	112	"	"	"	—	"	"	2 11/16"	5 1/2"	—	2 11/16"	1 1/4"	1 1/16"	100	R.E.	"	N112	100N-1	01-750-32602	01-750-32629	
	"	"	"	"	"	"	—	"	"	2 7/16"	6"	—	2 65/128"	"	"	"	R.B.	"	N112	100N-2	01-750-3240X	01-750-32426	
	"	"	"	"	"	"	—	"	"	"	"	—	2 7/16"	1 3/16"	"	90	G.N.	G	N112	90G-1	01-750-32207	01-750-32258	
	"	"	"	"	"	"	—	"	"	"	"	—	2 11/32"	1 1/4"	"	"	R.B.	N	N112	90N-1	01-750-32004	01-750-32055	
	"	"	"	"	"	"	—	"	"	3"	"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	"	N112	85N-1	01-750-31802	01-750-31853	
	"	"	"	"	"	"	—	"	"	"	"	—	"	"	"	"	"	"	N112	85N-1			01-750-31757
	"	"	100	"	"	2 11/16"	—	5 1/2"	2 11/16"	2 15/32"	5"	—	2 5/8"	1 3/16"	1"	100	RA	Q	N100	100Q-1			01-750-31503
	"	R.B.	"	"	"	2 65/128"	—	6"	2 7/16"	2 11/16"	5 1/2"	—	2 11/16"	1 1/4"	1 1/16"	100	R.E.	N	N100	100N-1	01-750-31407	01-750-31423	
	"	R.E	"	"	"	2 11/16"	—	5 1/2"	2 11/16"	2 7/16"	6"	—	2 7/16"	1 3/16"	"	90	G.N.	G	N100	90G-1	01-750-31204	01-750-31220	
	"	"	"	"	"	"	—	"	"	"	"	—	2 11/32"	1 1/4"	"	"	R.B.	N	N100	90N-1	01-750-31001	01-750-31028	
	"	R.B	"	"	"	2 65/128"	—	6"	2 7/16"	"	"	—	"	"	"	"	"	"	N100	90N-2	01-750-3080X	01-750-30826	
	"	RE	"	"	"	2 11/16"	—	5 1/2"	2 11/16"	2 15/32"	5"	—	2 29/64"	1 3/16"	1"	90	RA	Q	N100	90Q-1			01-750-31108
	"	"	"	"	"	"	—	"	"	3"	6"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	N	N100	85N-1	01-750-30607	01-750-30623	
	"	R.B.	"	"	"	2 65/128"	—	6"	2 7/16"	"	"	—	"	"	"	"	"	"	N100	85N-2	01-750-30404	01-750-30420	
	"	"	"	"	"	"	—	"	"	"	"	—	2 3/32"	1"	"	72	N.P.	"	N100	72N-1	01-750-30009	01-750-3005X	
	"	R.E.	"	"	"	2 11/16"	—	5 1/2"	2 11/16"	"	"	—	"	"	"	"	"	"	N100	72N-2	01-750-30201	01-750-30252	
	"	"	"	"	"	"	—	"	"	"	"	—	1 15/16"	"	"	66	"	"	N100	66N-1	01-750-29809	01-750-2985X	
	"	R.B.	"	"	"	2 65/128"	—	6"	2 7/16"	"	"	—	"	"	"	"	"	"	N100	66N-2	01-750-29606	01-750-29657	
	"	R.E.	"	"	"	2 11/16"	—	5 1/2"	2 11/16"	"	"	—	1 49/64"	"	3/4	56	"	"	N100	56N-1	01-750-29403	01-750-29454	

Revised Jan. 1980

This plan supersedes plan no. C-1404.0 Sh. N-3

RAIL DRILLING DETAILS

IDENTIFICATION "LETTERS"
SHOWING ORIGINAL PURCHASER OF RAIL

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G = G.N. RY.
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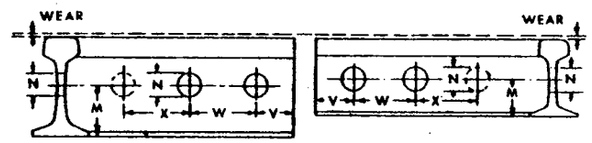


HIGH RAIL

REMARKS	RR	SECTION	WEIGHT	BOLT DIA	N DIAMETER OF HOLE IN RAIL	M BASE RAIL TO ℄ OF RAIL DRILLING	X CENTER 2nd TO CENTER 3rd HOLE	W CENTER 1st TO CENTER 2nd HOLE	V END OF RAIL TO CENTER 1st HOLE
	N	R.B.	90	1 1/16"	1 1/4"	2 11/32"	—	6"	2 7/16"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	ASCE	85	7/8"	1 1/8"	2 17/64"	—	6"	3"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	N.P.	72	"	1"	2 3/32"	—	"	"
	"	"	"	"	"	"	—	"	"
	"	"	66	3/4"	"	1 15/16"	—	6"	3"

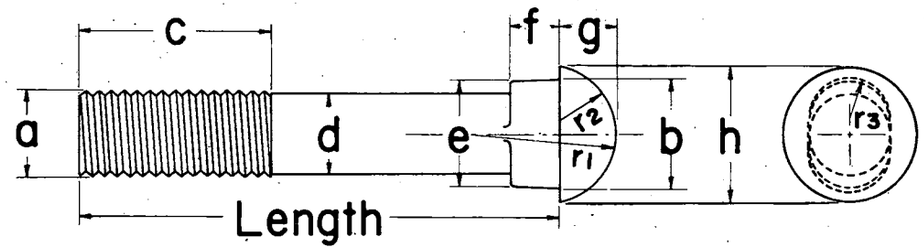
LOW RAIL

V END OF RAIL TO CENTER 1st HOLE	W CENTER 1st TO CENTER 2nd HOLE	X CENTER 2nd TO CENTER 3rd HOLE	M BASE RAIL TO ℄ OF RAIL DRILLING	N DIAMETER OF HOLE IN RAIL	BOLT DIA	WEIGHT	SECTION	RR	BAR NUMBER	CODED IN PAIRS 3L-4L	CODED IN PAIRS 1R-2R	CODED IN PAIRS A & B
3"	6"	—	2 17/64"	1 1/8"	7/8"	85	ASCE	N.P.	N 90 85N-1	01-750-29200	01-750-29227	
"	"	—	2 3/32"	1"	"	72	N.P.	"	N90 72N-1	01-750-29008	01-750-29024	
2 1/8"	4 1/2"	—	2 3/64"	"	"	70	ASCE	"	N90 70N-1	01-750-28806	01-750-28857	
"	"	—	1 51/64"	"	"	67	6703	"	N90 67N-1	01-750-28603	01-750-28654	
3"	6"	—	1 15/16"	"	"	66	N.P.	"	N90 66N-1	01-750-28400	01-750-28451	
"	"	—	1 49/64"	"	3/4"	56	"	"	N90 56N-1	01-750-28208	01-750-28259	
"	"	—	2 3/32"	"	7/8"	72	N.P.	"	N85 72N-1	01-750-28005	01-750-28056	
2 1/8"	4 1/2"	—	1 51/64"	"	"	67	6703	"	N85 67N-1	01-750-27803	01-750-27854	
3"	6"	—	1 15/16"	"	"	66	N.P.	"	N85 66N-1	01-750-27600	01-750-27651	
"	"	—	1 49/64"	"	3/4"	56	"	"	N85 56N-1	01-750-27408	01-750-27459	
3"	6"	—	1 15/16"	"	7/8"	66	"	"	N72 66N-1	01-750-27205	01-750-27256	
"	"	—	1 49/64"	"	3/4"	56	"	"	N72 56N-1	01-750-27109	01-750-27125	
"	"	—	"	"	"	"	"	"	N66 56N-1	01-750-27002	01-750-27029	

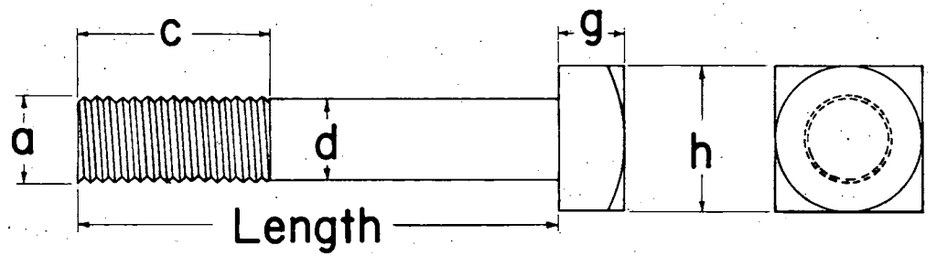
Revised Jan 1980

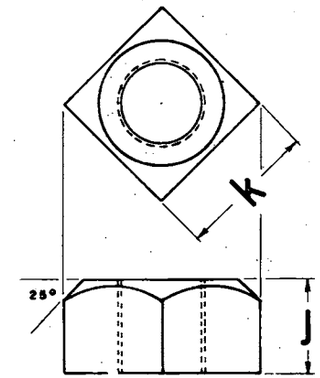
This plan supersedes plan no C-1404.0 Sh N-4

TYPE
A THRU H



TYPE
J





NOTE:

TRACK BOLT AND MEDIUM CARBON NUT TO CONFORM TO A.R.E.A. SPECIFICATIONS 4-2-15.

TYPE BOLT TO BE STAMPED ON HEAD "A" "B" "C" ETC.

WRENCH FIT NUTS.

Type	Length in.	Table Of Dimensions												
		a	b	c	d	e	f	g	h	j	k	r1	r2	r3
A	6, 6 1/2 or 6 3/4	1 1/8"	1 7/16"	2 1/2"	1 1/16"	1 13/32"	5/8"	3/4"	1 13/16"	1 1/8"	1 13/16"	1 55/64"	43/64"	1/2 BODY DIA. OF BOLT
B	5 1/2 or 6	1 1/16"	1 3/8"	"	1"	1 11/32"	9/16"	5/8"	1 11/16"	"	1 5/8"	1 5/8"	19/32"	
C	5, 5 1/2, 6 or 6 1/2	1"	"	"	15/16"	"	"	"	"	1"	"	"	"	
D	5, 5 1/2 or 6	"	1 1/4"	"	"	1 7/32"	"	"	"	"	"	"	"	
E	5 or 5 1/2	15/16"	1 7/32"	2 1/4"	7/8"	1 3/16"	17/32"	39/64"	1 17/32"	1 1/8"	1 7/16"	1 25/64"	33/64"	
F	4 1/2 or 5	7/8"	"	"	13/16"	"	1/2"	35/64"	1 31/64"	7/8"	"	"	"	
G	4 1/2 or 5	13/16"	1 1/16"	"	3/4"	1 1/32"	15/32"	33/64"	1 11/32"	1"	1 3/8"	1 5/32"	7/16"	
H	3 1/2 or 4	3/4"	"	2"	11/16"	"	7/16"	15/32"	1 9/32"	3/4"	1 1/4"	"	"	
J	4, 4 1/2, 5 or 5 1/2	7/8"	—	2 1/4"	7/8"	—	—	5/8"	1 7/16"	7/8"	1 7/16"	—	—	

BURLINGTON NORTHERN INC.
STANDARD PLAN

TRACK BOLT

ENGINEERING DIVISION, ST. PAUL, MINN. MAR. 1976

Recommended: R. G. Anderson — Asst Vice President Engineering

Approved: L. E. Harrington — Vice President, Operations

Revised 10-76
THIS PLAN SUPERSEDES PLAN NO C-1600.2

Dwg. Nº C-1600.3

Sheet 1

TRACK BOLTS TO BE USED WITH VARIOUS RAIL SECTIONS

COMPANY	WT. LBS. PER YD.	TYPE	JT. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
N.P.	130	R.E.	T-6-9	5"	24"	T-8-9		A	6 3/4"
G.N.	"	Penn.	3100-67-2	4 1/2	"	3102-11-3		"	6 1/2"
B.N	132	R.E.	C-1400.1	4"	36"	C-1600.0		"	6"
G.N.	"	"	3100-96-1	"	"	3102-11-3		"	"
G.N.	131	"	3100-94-1	"	24"	" " "		"	"
B.N	115	"	C-1401.1	"	36"	C-1600.0		"	"
S.P.&S	132	R.E.	TV 454	4"	39"	CC 214-A		B	6"
"	"	"	TV 454-A	"	36"	" " "		"	"
"	131	"	T-6-14	"	24"			"	"
"	115	"	TV447	3 5/8"	39"	" " "		"	"
"	"	"	TV447-A	4"	36"	" " "		"	"
"	112	"	T-6-13	"	24"	" " "		"	"
"	100	"	CC-220	4 5/8"	"	" " "		"	"
G.N.	115	"	3100-95-1	4"	36"	3102-11-3		"	"
"	112	"	3100-93-1	"	24"	" " "		"	"
"	110	G.N.	3100-79-2	3 3/4"	26"			"	"
"	"	"	3100-79-4	4 1/8"	"			"	"
N.P.	140	R.E.				T-8-9		"	"
"	136	"				" " "		"	"
"	132	"	T-6-18	4"	39"	" " "		"	"
"	"	"	T-6-18-A	"	36"	" " "		"	"
"	131	"	T-6-14	"	"	" " "		"	"
"	"	"	T-6-15-A	"	39"	" " "		"	"
"	119	"	1090-280	"	36"	" " "		"	"
"	115	"	T-6-16	"	24"	" " "		"	"
"	"	"	T-6-17-A	"	36"	" " "		"	"
"	"	"	T-6-17	3 5/8"	39"	" " "		"	"
"	112	"	T-6-13	4"	24"	" " "		"	"
"	100	"	T-6-6	4 5/8"	"	" " "		"	"
"	"	"	T-6-7	"	"	" " "		"	"
N.P.	100	"	T-6-10	3 5/8"	"	T-8-9		B	5 1/2"
"	"	R.B.	T-6-12	4"	"	" " "		"	"
"	"	"	T-6-8	3 1/2"	"	" " "		"	"
"	90	"	T-6-5A	3 7/16"	"	" " "		"	"
"	"	"	T-6-5	"	"	" " "		"	"
"	"	"	T-6-11	3 1/4	"	" " "		"	"
S.P&S	"	G.N.	1022-86	3 1/2"	"	CC 214-A		"	"
"	"	"	CC-217	3 5/16"	"	" " "		"	"
G.N.	"	"	3100-82-2	3 1/8"	"	3102-11-3		"	"
"	"	"	3100-82-1	3 3/8"	"	" " "		"	"
"	"	"	3100-99-1	3 1/2"	"	" " "		"	"

COMPANY	WT. LBS. PER YD.	TYPE	JT. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
C.B.&Q	136	R.E.	106132-B	4 3/8"	36"	106445	136	C	6 1/2"
"	131	"	76356	4 5/8"	"	"	"	"	"
"	136	"	110111	4"	"	"	"	"	6"
"	131	"	81762	"	"	"	"	"	"
"	"	"	79845-A	"	"	"	"	"	"
"	"	"	76523-A	"	"	"	"	"	"
"	"	"	76512-A	"	"	"	"	"	"
"	129	T.R.	85546-A	"	"	"	"	"	"
"	"	"	95845-C	"	"	"	"	"	"
"	112	R.E.	74088-B	"	24"	"	"	"	"
"	"	"	79844-A	4"	"	"	"	"	"
"	"	T.R.	92284	4"	36"	"	"	"	"
"	"	"	86979	"	24"	"	"	"	"
"	"	"	82526		"	"	"	"	"
"	"	"	95643-A		36"	"	"	"	"
"	112	R.E.	72210-B	4 1/4"	24"	81086-E	96	D	6"
"	"	"	72515		"	"	"	"	"
"	110	"	69595		35"	"	"	"	"
"	"	"	69344		24"	"	"	"	"
"	100	R.A	58383-A	3 15/16"	"	"	"	"	"
"	"	"	69345		"	"	"	"	"
"	90	"	69346		"				
"	110	R.E	73893	3 11/16"	"	49944	7	"	5 1/2"
"	"	"	65831-A	3 5/8"	"	"	"	"	"
"	"	"	65830	"	"	"	"	"	"
"	"	"	63826-A	"	"	"	"	"	"
"	"	"	82264	"	35"	"	"	"	"
"	"	"	59954-C	3 11/16"	24"	"	"	"	"
"	"	"	62186-B		38"	"	"	"	"
"	100	R.A.	44013-C	3 7/16"	24"	"	"	"	"
"	"	"	41469-C	3 5/16"	"	"	"	"	"
"	"	"	45371-C	3 7/16"	"	"	"	"	"
"	"	"	41470-C	"	36"	"	"	"	"
"	"	"	73323-B	3 9/16"	24"	"	"	"	"
"	"	"	73290-B	3 7/16"	"	"	"	"	"
"	"	"	53066-F	3 9/16"	"	"	"	"	"
"	"	"	74955-C	"	"	"	"	"	"
"	"	"	67349-A	3 11/16"	"	"	"	"	"
"	"	"	41470		36"	"	"	"	"

Revised 10-76
THIS PLAN SUPERSEDES PLAN Nº C-1600.0

TRACK BOLTS TO BE USED WITH VARIOUS RAIL SECTIONS

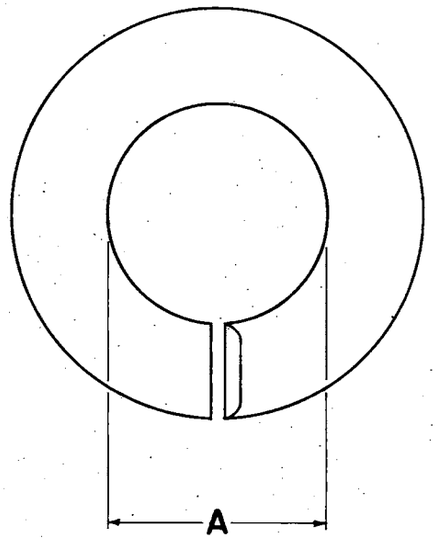
COMPANY	WT. LBS. PER YD.	TYPE	JT. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
C.B.&Q	90	R.A.	73332-B	3 7/16"	24"	49944	7	D	5 1/2"
"	"	"	53059-E	3 9/16"	"	"	"	"	"
"	"	"	51801-C	"	"	"	"	"	"
"	"	"	41472-C	3 5/16"	"	"	"	"	"
"	"	"	67351	3 3/4"	"	"	"	"	"
"	"	"	60045-A	3 9/16"	"	"	"	"	"
"	"	"	44012-D	3 7/16"	"	"	"	"	"
"	"	"	41473-C	"	"	"	"	"	"
"	"	"	73331-B	3 9/16	"	"	"	"	"
"	85	C.B.&Q	57934-D	3 1/2"	"	"	"	"	"
"	"	"	51798-B		"	"	"	"	"
"	"	"	49766-G		"	"	"	"	"
"	90	R.A	41474-C	3 1/8"	"	53792-D	5	"	5"
"	"	"	81769	3 7/16"	"	53847-D	7A	"	"
"	85	C.B.&Q	41478-C			53792-D	5	"	"
S.P.&S	85-06	G.N.		HD. FREE JTS.		CC 214-A		E	5 1/2"
	"	"	CC-218	3 3/8"	"	"		"	"
G.N.	85	"	3100-50-1	3 1/8"	"	3102-11-3		"	5"
"	80	ASCE	1621-10-2	3 1/16"	"	"		"	"

COMPANY	WT. LBS. PER YD.	TYPE	JT. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
C.B.&Q	65	A.S.C.E.	41491-B	—	26 1/2"	40279-E	16	J	5 1/2"
"	85	C.B.&Q.	41482-A	3 1/4"	35 1/4"	78844-B	3A	"	5"
"	"	"	41479-B	2 23/32"	35 1/2"	"	"	"	4 1/2"
"	"	"	41481-A	"	24"	"	"	"	"
"	75	A.S.C.E	73410	—	"	"	"	"	"
"	66	N.P.	41483-B	2 23/32"	35"	"	"	"	"
"	85	C.B.&Q.	41483-A	2 17/32"	24"	"	"	"	4"
"	"	"	41477-B	2 19/32"	35	"	"	"	"
"	"	"	45368-B	"	24"	"	"	"	"
"	75	A.S.C.E. RER.	41486-A	"	35	"	"	"	"
"	"	A.S.C.E.	41485-B	"	24"	"	"	"	"
"	"	"	73409	2 5/8"	"	"	"	"	"
"	"	"	41484-A	2 19/32"	35	"	"	"	"
"	66	N.P.	41488-B	2 3/8"	24"	"	"	"	"
"	65	A.S.C.E.	41490-D	2 11/16"	35	"	"	"	"
C.B.&Q.	75	A.S.C.E.	58269-C	3 1/4"	24"	54718-E	9	F	5"
"	"	"	54713-C	3 9/32"	"	"	"	"	"
"	"	"	72629	—	"	"	"	"	"
"	66	N.P.	55065-D	3 1/4"	"	"	"	"	"
"	65	A.S.C.E.	55064-B	3 1/8"	"	"	"	"	"
N.P.	85	N.P.	T-6-4	3 5/32"	"	"	"	"	4 1/2"
"	72	"	T-6-3A	3 7/32"	"	"	"	"	"
"	66	"	T-5-2A	3 1/4"	"	"	"	"	"

TRACK BOLTS TO BE USED WITH VARIOUS RAIL SECTIONS

COMPANY	WT. LBS. PER YD.	TYPE	J.T. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
G.N.	80-91	G.N.	3100-50-1	3 1/8"	24"	3102-11-3.		G	5"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	80-00	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	80-04	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	77 1/2	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	75-93	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	75-96	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
"	75-87	"	3100-50-1	3 1/8"	"	"		"	"
"	"	"	3100-101-1	2 15/16"	"	"		"	"
S.P.&S.	75	—	—	—	—				
"	72	—	—	—	—				
"	70	—	—	—	—				
G.N.	72	G.N.	1114-28-8	2 5/8"		3102-11-3		G	4 1/2"
"	70	A.S.C.E.	1055-35-1	2 27/32"		"		"	"
"	68	G.N.	3100-100-1	3"	24	"		"	"
"	"	"	3100-73-1	2 25/32"	"	"		"	"
"	66 1/2	"	3100-100-1	3"	"	"		"	"
"	"	"	3100-73-1	2 25/32"	"	"		"	"
"	60	ST.P.M.&M.	3100-100-1	3"	"	"		"	"
"	"	"	3100-73-1	2 25/32"	"	"		"	"
"	56	"	3100-100-1	3"	"	"		"	"
"	"	"	3100-73-1	2 25/32"	"	"		"	"

COMPANY	WT. LBS. PER YD.	TYPE	J.T. BAR PLAN NO. BY ROAD	BAR DISTANCE FACE TO FACE	LENGTH OF BAR	FORMER ROAD BOLT AND PLAN NUMBER		BOLT TYPE PER B.N. PLAN C-1600.1	
						PLAN Nº	BOLT Nº	TYPE	LENGTH
C.B.&Q.	66	C.B.&Q.-OP.	54341-B	2 3/4"	24"	55061-A	1-B	H	4"
"	"	" "	52066-B	2 7/16"	"	53077-B	1-A	"	"
"	"	" "	41489-B	2 15/32"	"	"	"	"	"
"	60	S.C.O.N.&W.	54424-B	2 3/4"	"	55061-A	1-B	"	"
"	"	C.B.&Q.	41493-A	2 1/4"	26 1/2"	"	"	"	"
"	"	S.C.O.N.&W.	41495-B	2 5/8"	24"	53077-B	1-A	"	"
"	"	K.&W.	52067-C	2 3/8"	"	"	"	"	"
"	"	S.C.O.N.&W.	45630-B	2 1/2"	"	"	"	"	"
"	"	"	41496-B	"	"	"	"	"	"
"	"	Q.O.&K.C.	59646	2 3/4"	"	55061-A	1-B	"	"
"	"	K.&W.	54579-C	"	"	"	"	"	"
"	"	C.B.&Q.	41492-C	2 1/4"	"	53077-B	1-A	"	"
"	"	J.S.E.	41494-A	2 5/8"	22"	"	"	"	"
"	56	C.B.&Q	41498-B	2 5/16"	21"	"	"	"	"
"	"	"	75642	2 1/2"	"	"	"	"	"
"	"	C.B.&-N.P.	41499-B	"	32"	"	"	"	"
"	"	C.B.&Q.	75799	"	20 1/2	"	"	"	"
"	"	"	41500-B	"	26 1/2"	"	"	"	"
"	"	"	41501-C	2 3/8"	20 1/2"	"	"	"	"
"	"	"	75642	2 9/16"	21"	"	"	"	"

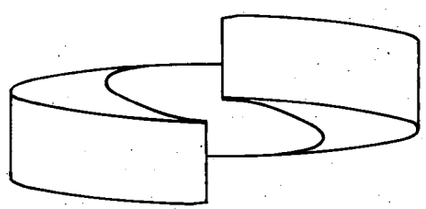


BOLT DIA.	MIN.	MAX.
	A	A
3/4"	25/32"	13/16"
13/16"	27/32"	7/8"
7/8"	29/32"	15/16"
15/16"	31/32"	1"
1"	1 1/32"	1 1/16"
1 1/16"	1 3/32"	1 1/8
1 1/8"	1 5/32"	1 3/16

FOR USE WITH VARIOUS SIZE TRACK BOLTS.

NOTE:

SPRING WASHER TO CONFORM TO A.R.E.A SPECIFICATIONS 4-2-19.



BURLINGTON NORTHERN INC.
STANDARD PLAN

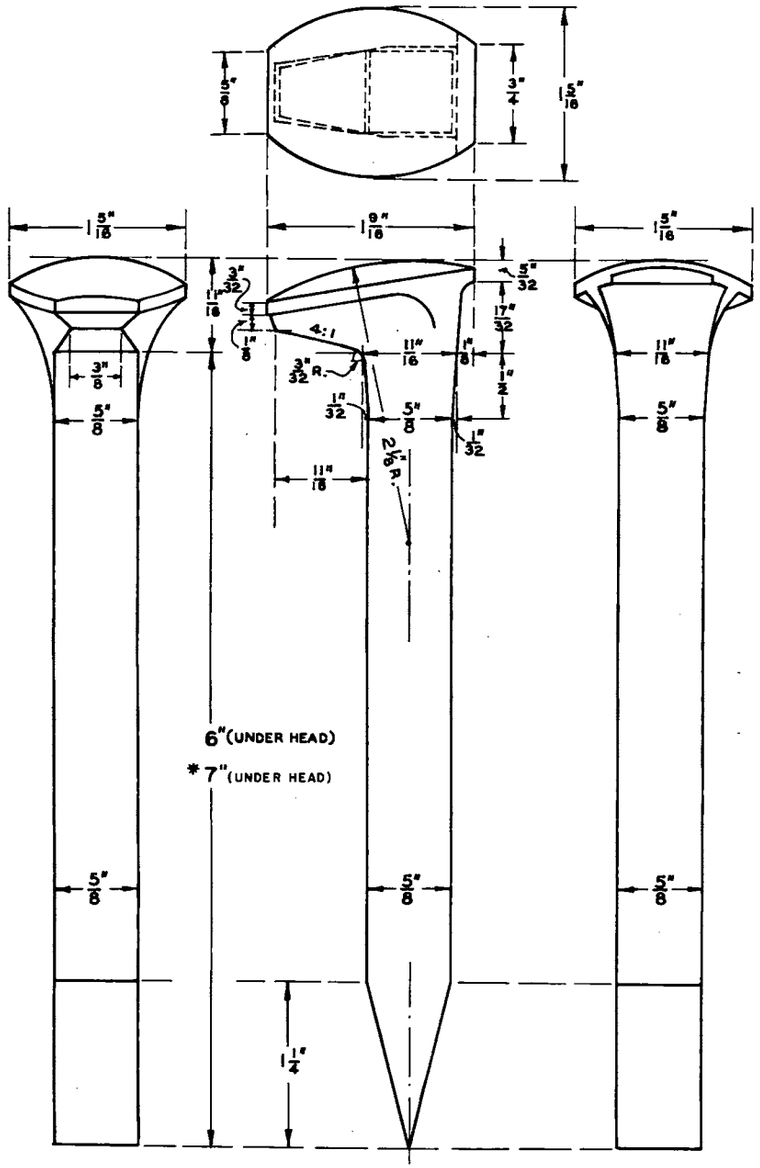
SPRING WASHER

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1975

Recommended: B.B. Anderson — Asst. Vice President Engineering

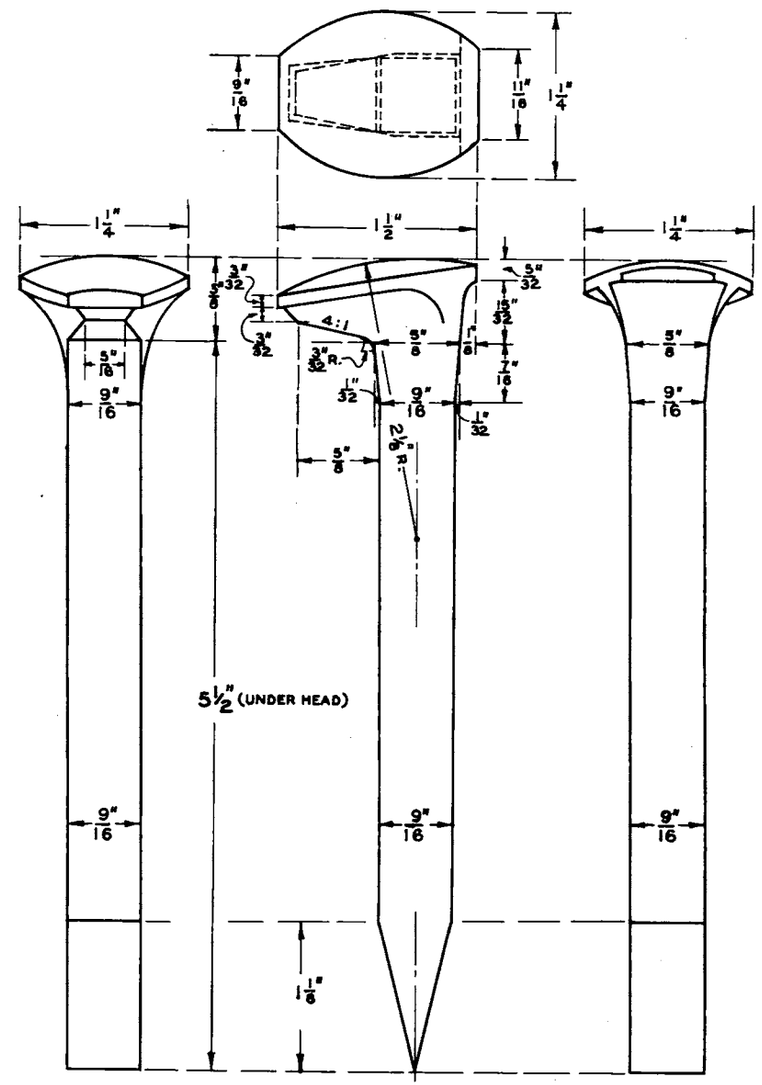
Approved: S.E. Ethrington — Vice President, Operations

Dwg. № C-1601.0



$\frac{5}{8}$" x 6" TRACK SPIKE

* $\frac{5}{8}$" x 7" SHIMMING SPIKE



$\frac{9}{16}$" x 5 $\frac{1}{2}$" TRACK SPIKE

NOTE:
SPIKES TO CONFORM TO A.R.E.A. PLAN 5-2-6 AND SPECIFICATIONS FOR HIGH CARBON STEEL TRACK SPIKES.

BURLINGTON NORTHERN INC.
STANDARD PLAN

TRACK SPIKES

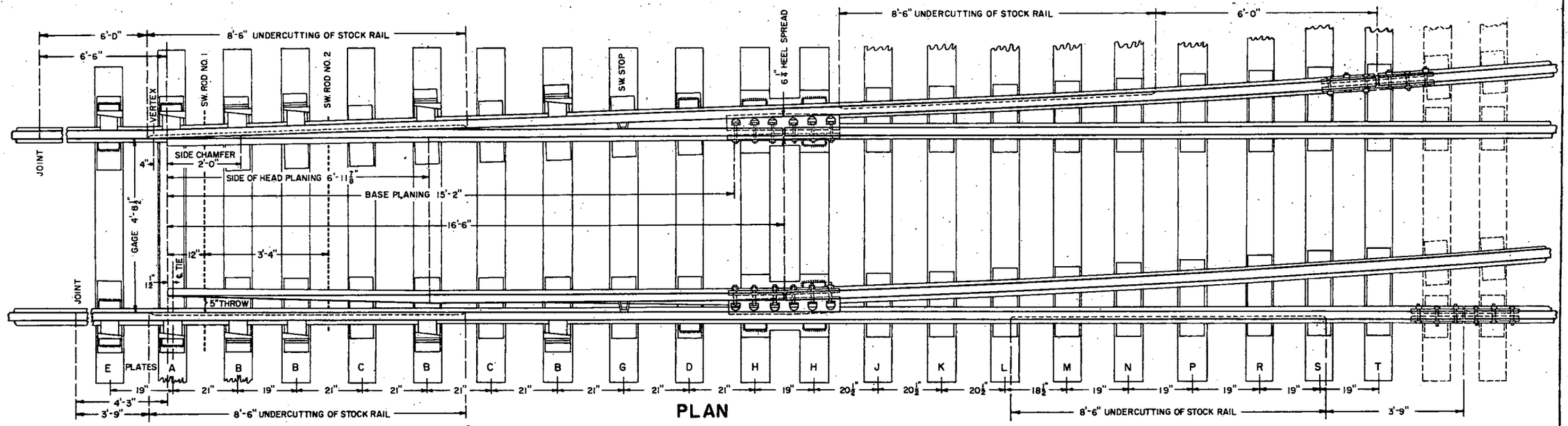
ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1970

Recommended
B. H. Anderson
Asst. Vice President Engineering

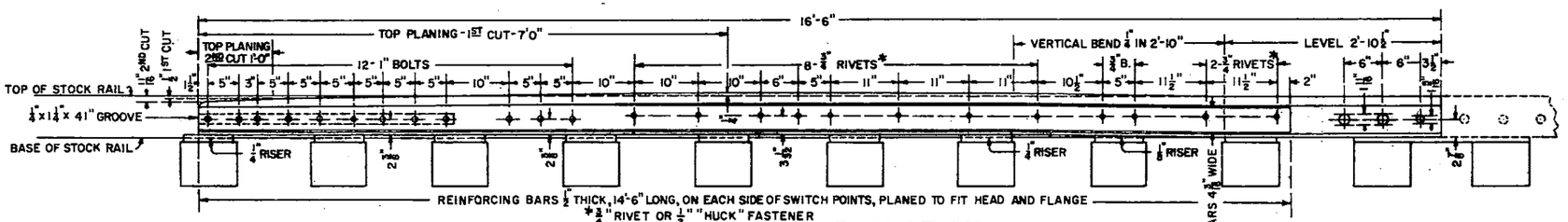
Approved
D. M. Lowe
Vice President Operations

Revised 2-76, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1650.1

Dwg. Nº C-1650.2



PLAN



ELEVATION

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.

SURFACE HARDEN STOCK RAILS.

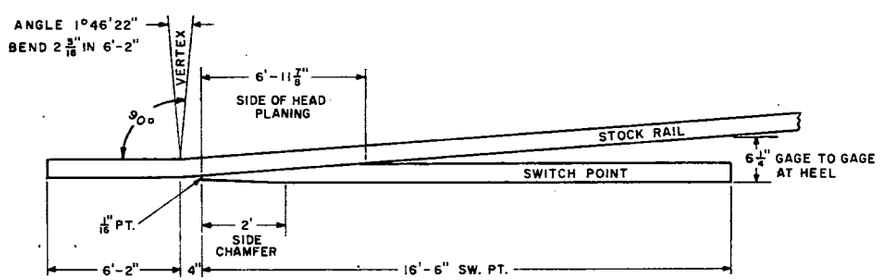
SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

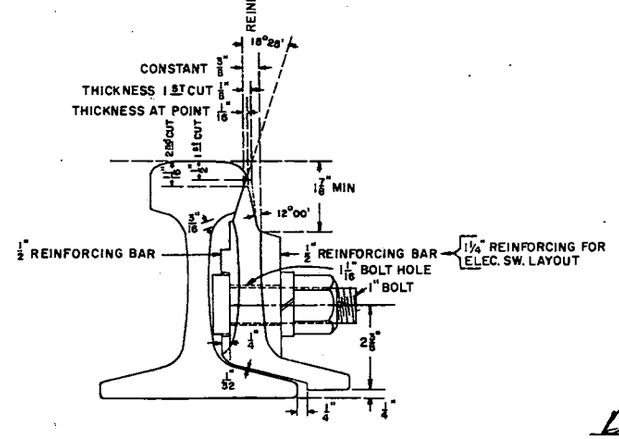
THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

MANGANESE TIP INSERTS.

ADJUSTABLE MANGANESE SWITCH POINT GUARD.



DETAIL OF STOCK RAIL BENDING AND SWITCH ANGLE



SECTION AT POINT

BURLINGTON NORTHERN INC.

STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 115 LB. R.E. RAIL (UNDERCUT)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended: B. G. Anderson, Asst. Vice President Engineering

Approved: W. W. Bowlby, Vice President, Operations

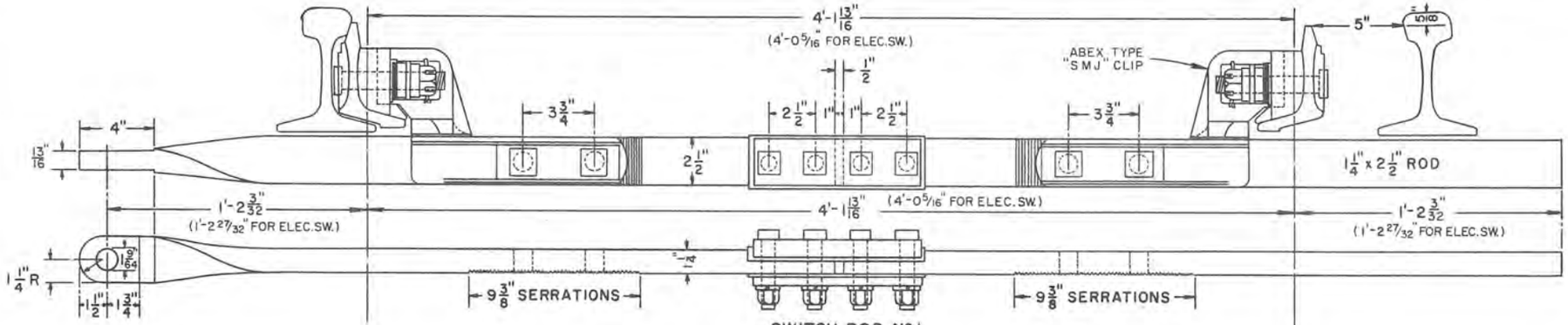
Revised 7-71, 12-71, 11-74, 10-81

THIS PLAN SUPERSEDES PLAN NO. C-1700.3

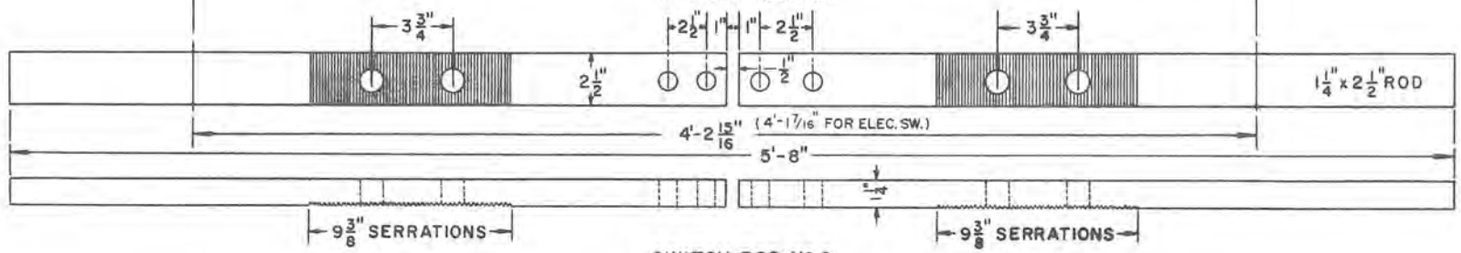
(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1700.4

SHEET 1

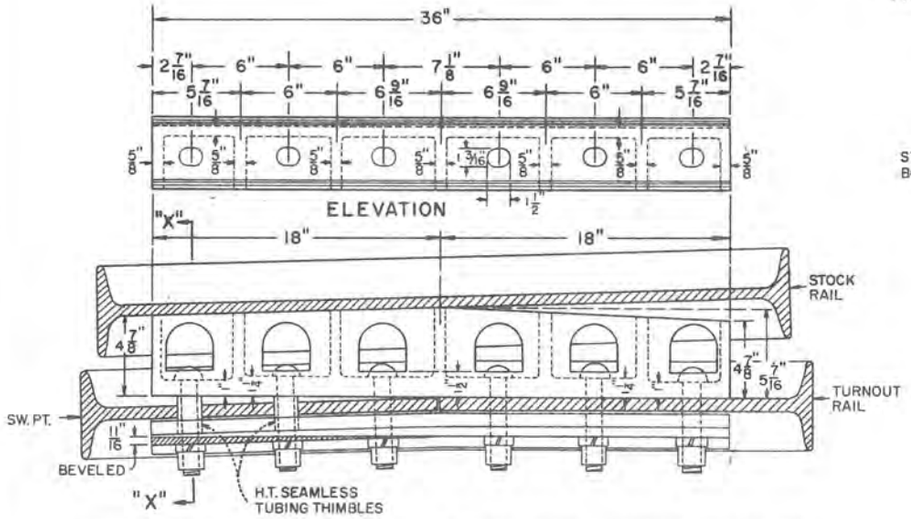


SWITCH ROD Nº 1
TYPE "SMJ" INSULATED



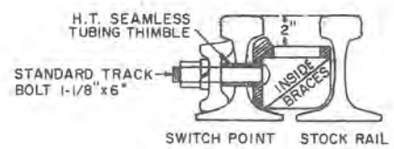
SWITCH ROD Nº 2
TYPE "SMJ" INSULATED

NOTE:
MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITIONS AS SHOWN ON PLANS.
FOR ELEC. SW. LAYOUT FURNISH 1¼" REINFORCING BARS FOR GAGE SIDE OF SW. POINTS WITH 1"x6¼" WEB BOLTS FOR RECESSED HEAD AND 1"x6½" FOR NON RECESSED HEAD.

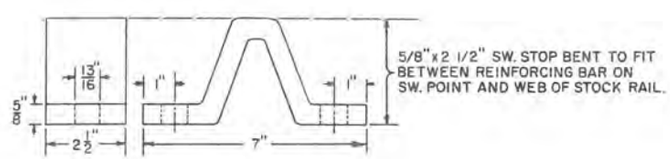


STANDARD 36" 115 LB. JOINT BAR BENT 11/16" IN 18" IN MIDDLE AND TOP CORNER BEVELED OFF FROM 11/16" AT END TO NOTHING IN LENGTH OF BEND. ONE LEFT AND ONE RIGHT WITH EACH SWITCH. 2 END HOLES COUNTERBORED TO FIT THIMBLE.

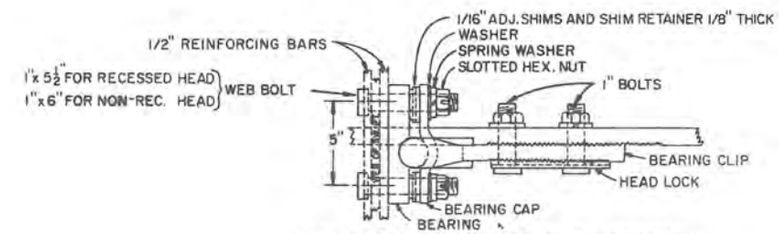
CAST STEEL HEEL BLOCK



SECTION THRU HEEL BLOCK AT "X"-"X"



SWITCH STOP



TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 115 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. APRIL 1975

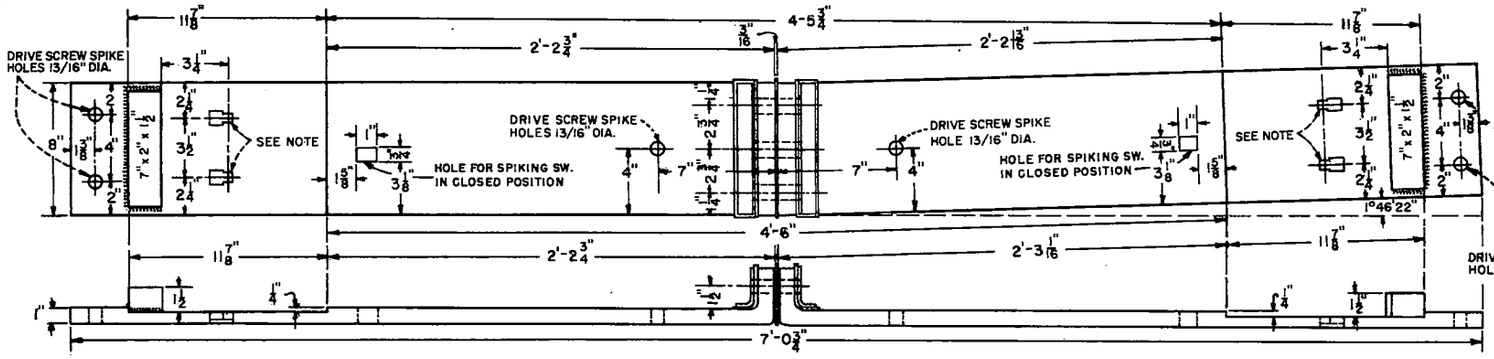
Recommended: B. H. Anderson — Asst. Vice President Engineering

Approved: R. M. Bomberger — Vice President, Operations

Dwg. Nº C-1700.2

SHEET 2

THIS PLAN SUPERSEDES PLAN NO. C-1700.1



GAGE PLATE A (INSULATED TYPE)

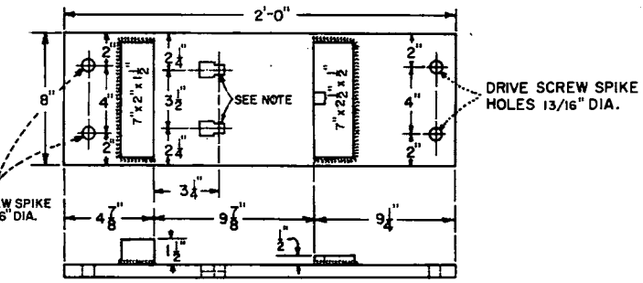


PLATE E

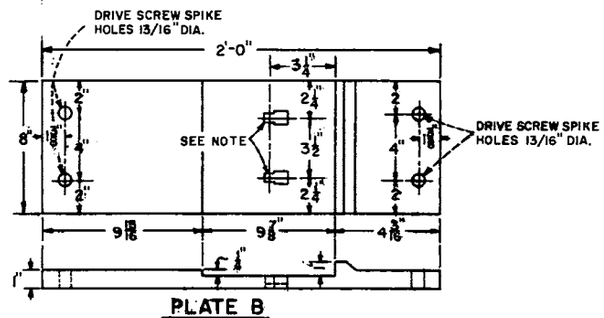
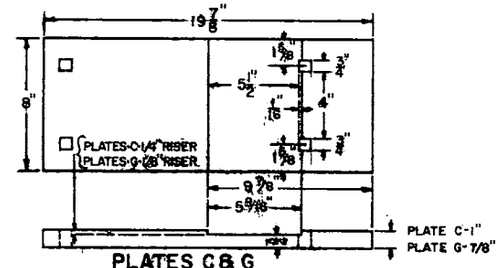


PLATE B



PLATES C & G

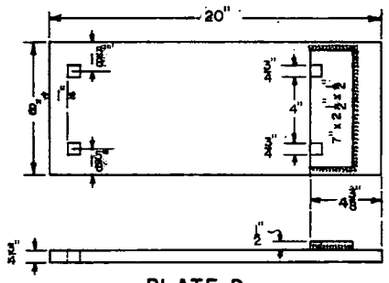
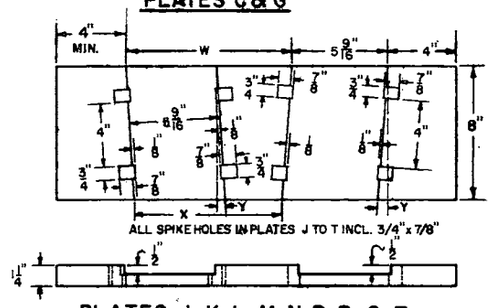
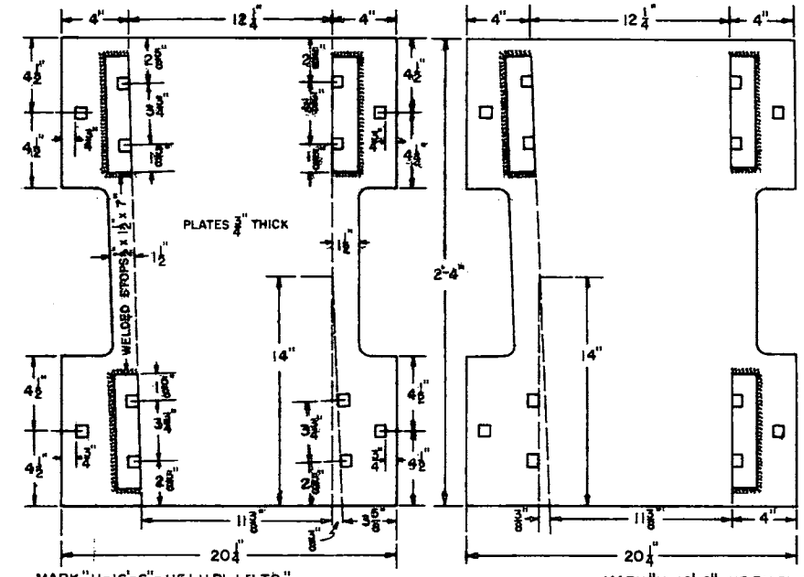


PLATE D



PLATES J, K, L, M, N, P, R, S, T.

MARK PLATES J TO T INCL. AS SHOWN "L.H." MAKE OPPOSITE AND MARK "R.H."



MARK "H-16'-6"-115 LH.PL.LH.T.O." MAKE OPPOSITE FOR "H-16'-6"-115 RH.PL.RH.T.O."

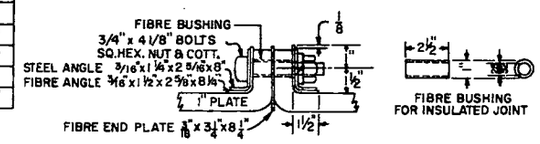
TWO TIE HEEL PLATE H

MARK "H-16'-6"-115 RH.PL.LH.T.O." MAKE OPPOSITE FOR "H-16'-6"-115 LH.PL.RH.T.O."

NOTE:

PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL. (THUS 16-6-A-115)
12 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH.
46 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG. TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARDWOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.

DIMENSIONS OF PLATES J THRU T						
	NO. 7 T.O.			NO. 9 T.O.		
PLATE	W	X	Y	W	X	Y
J	7 7/16"	7 3/16"	5/32"	7 5/16"	7 1/16"	1/8"
K	8 5/16"	7 15/16"	3/16"	8"	7 3/4"	1/8"
L	9 1/4"	8 7/8"	3/16"	8 3/4"	8 1/2"	1/8"
M	10 3/16"	9 3/4"	7/32"	9 1/2"	9 3/16	5/32"
N	11 3/16"	10 3/4"	7/32	10 1/4"	9 7/8"	3/16"
P	12 5/16"	11 13/16"	1/4"	11 3/16"	10 7/8"	5/32"
R	13 1/2"	13"	1/4"	12 3/16"	11 3/4"	7/32"
S				13 3/16"	12 11/16"	1/4"
T				14 1/8"	13 11/16"	7/32"



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 115 LB. R.E. RAIL

(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY, 1975

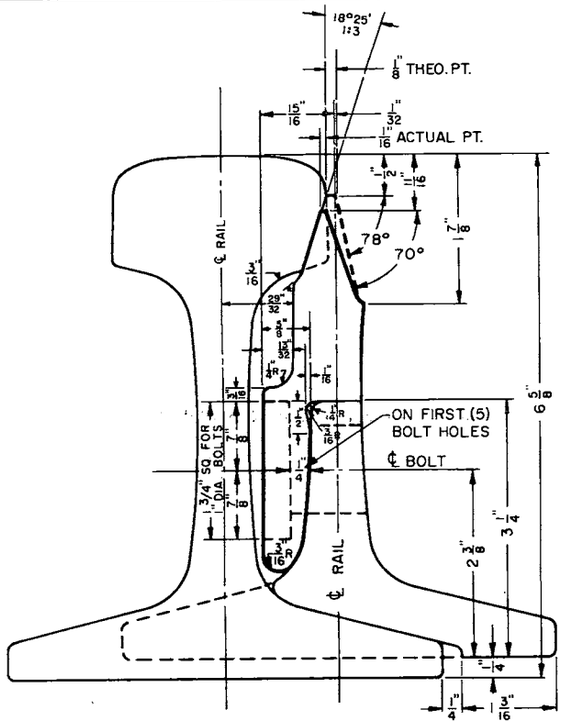
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: W. M. Bonnell, Vice President, Operations

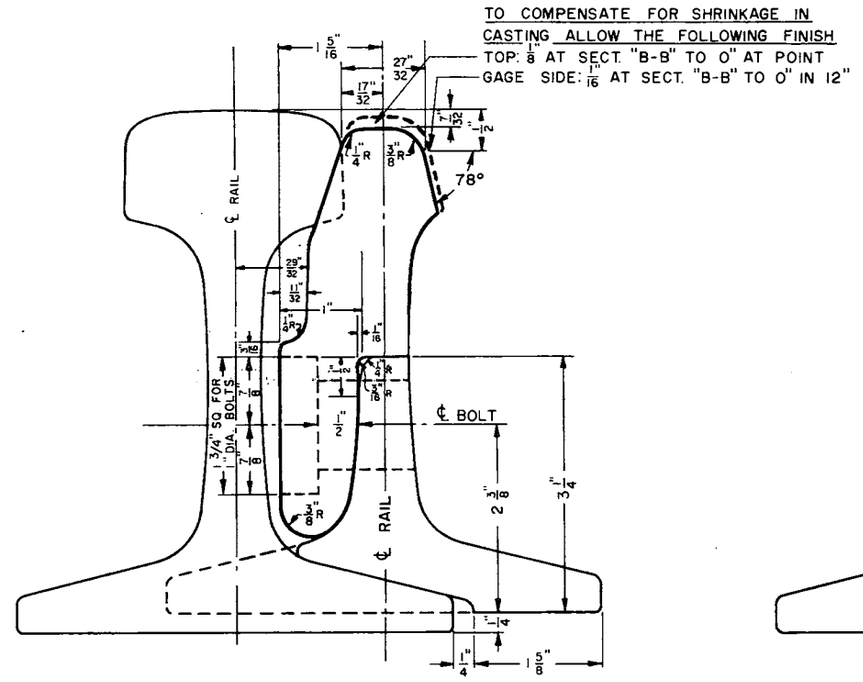
Dwg. Nº C-1700.4

THIS PLAN SUPERSEDES PLAN NO. C-1700.3

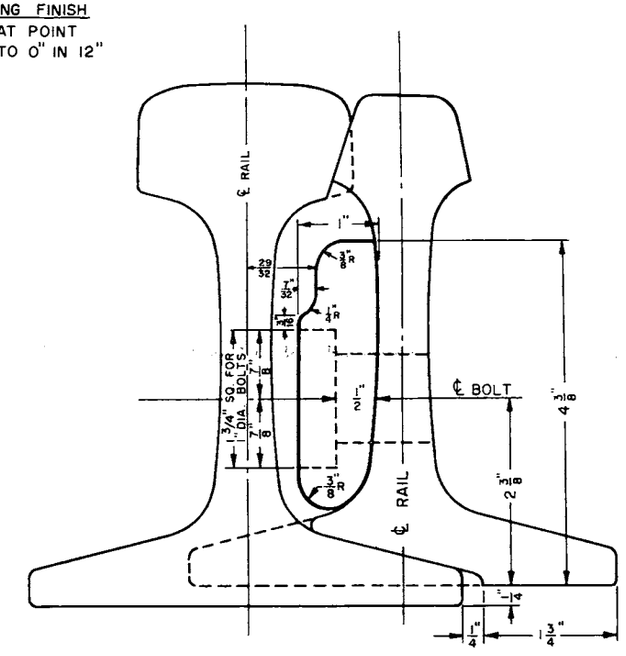
SHEET 3



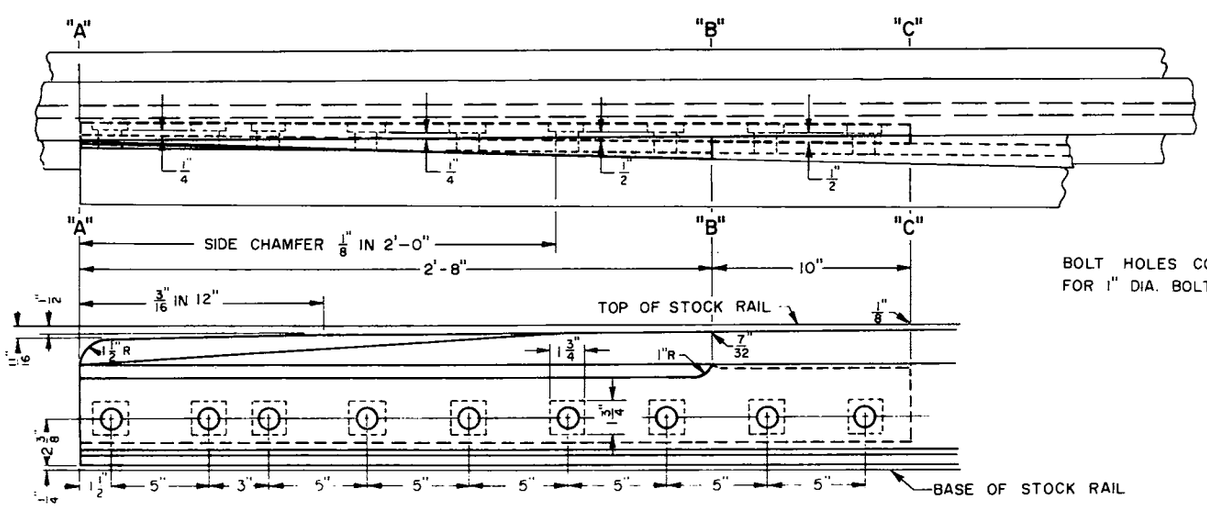
SECTION "A-A"



SECTION "B-B"



SECTION "C-C"



L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

BOLT HOLES CORED 1 1/8" DIA. FOR 1" DIA. BOLTS

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

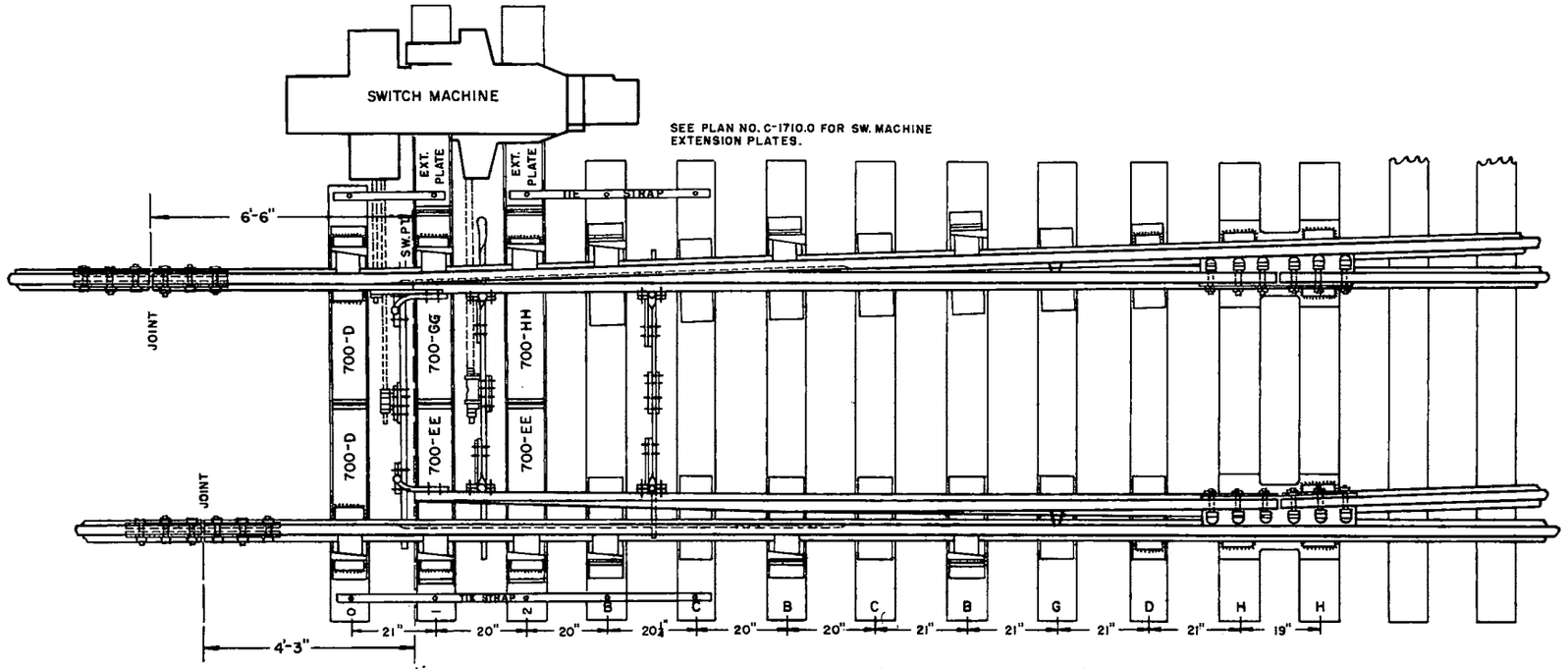
MANGANESE TIPS FOR 115 LB. 16'-6" SWITCH POINTS

ENGINEERING DIVISION, ST PAUL, MINN. JUNE, 1971

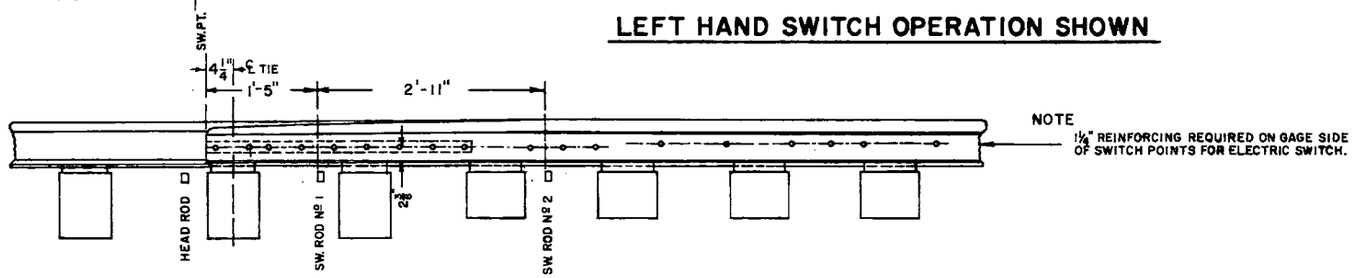
Recommended
B. H. Anderson
Asst Vice President Engineering

Approved
J. C. Thompson
Vice President, Operations

Dwg Nº C-1700.0
SHEET 4



LEFT HAND SWITCH OPERATION SHOWN



NOTE
1¼" REINFORCING REQUIRED ON GAGE SIDE OF SWITCH POINTS FOR ELECTRIC SWITCH.

NOTE

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 700 SERIES ARE TO BE MARKED THUS 700-GG L.H., 700-HH L.H., ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED.

SURFACE HARDEN STOCK RAILS.

FURNISH 12-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 62-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 10-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

NOTE¹

BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.
ELECTRIC SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN FOR TIES 0, 1 AND 2.

BURLINGTON NORTHERN INC.
STANDARD PLAN

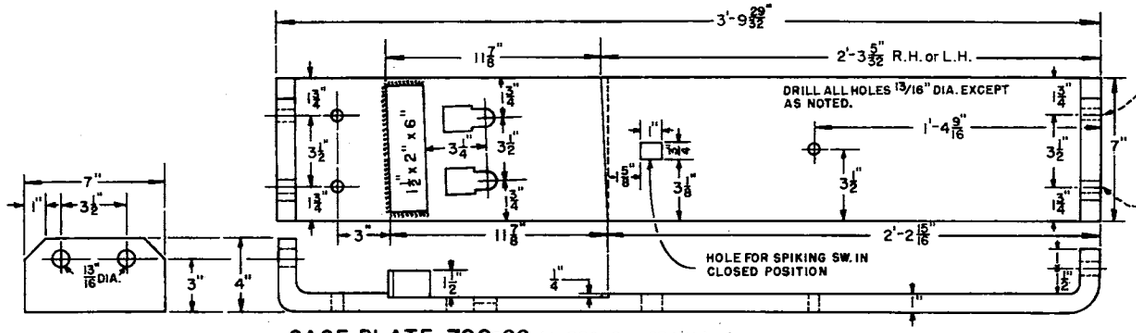
16'-6" STRAIGHT ELECTRIC SWITCH
115 LB. R.E. RAIL (UNDERCUT)

ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1977

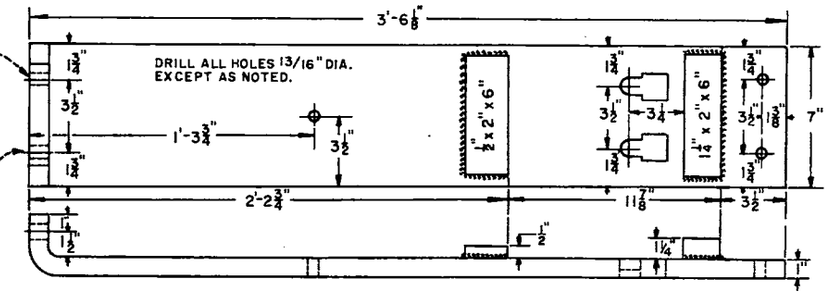
Recommended: R. H. Anderson, Asst. Vice President Engineering
Approved: S. C. Thrington, Vice President, Operations

Revised 8-72, 6-73, 4-80
THIS PLAN SUPERSEDES PLAN NO. C-1700.2

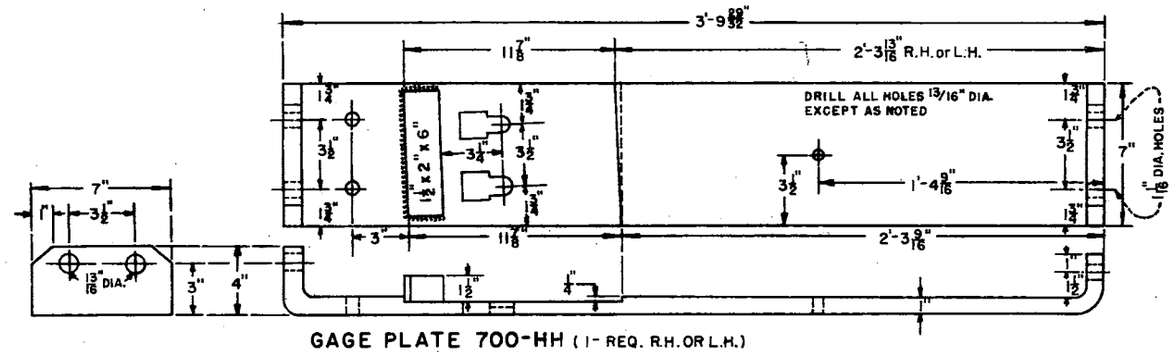
Dwg. Nº C-1700.3
SHEET 5



GAGE PLATE 700-GG (1-REQ. R.H. OR L.H.)

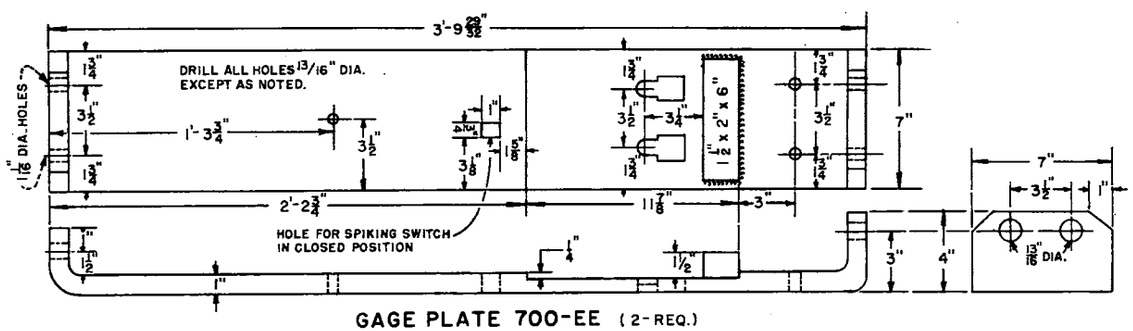


GAGE PLATE 700-D (2-REQ.)



GAGE PLATE 700-HH (1-REQ. R.H. OR L.H.)

NOTE
ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.



GAGE PLATE 700-EE (2-REQ.)

BURLINGTON NORTHERN INC.
STANDARD PLAN

16'-6" STRAIGHT ELECTRIC SWITCH
115 LB. R.E. RAIL (UNDERCUT)
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. SEPT. 1971

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Revised 8-72, 6-73, 10-81
THIS PLAN SUPERSEDES PLAN Nº C-1700.2

Dwg. Nº C-1700.3
SHEET 6

No. 9 Turnout C-2053 — 16'-6" 1'5# R.E. C-1700 - Electric 1¼" Reinf. — 16'-6" 115# Electric

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete	W/O Stock Rails	01-407-00957	W/O Stock Rails	01-407-00981
LH 39' Stock Rail	Bent	08-043-00500	Straight	08-043-00682
RH 39' Stock Rail	Straight	08-043-00623	Bent	08-043-0056X
LH 16'-6" Switch Point	Straight W/O Mang. Tip	01-407-00674	Straight W/Mang.Tip	01-407-00682
RH 16'-6" Switch Point	Straight W/Mang. Tip	01-407-00789	Straight w/o Mang. Tip	01-407-00770
LH Two Tie Heel Plate	LH Plate	01-407-09150	LH Plate	01-407-09169
RH Two Tie Heel Plate	RH Plate	01-407-09177	RH Plate	01-407-09185

Material

Description	Stock Code No.
Bar, Joint Bent RH	01-407-00615
LH	01-407-00607
Bar Insulated Complete	
3M	01-403-50408
Portec	01-403-50504
Block, Heel	01-407-00631
Brace, Rail Complete	01-129-09008
Clip, SMJ Complete	01-407-01220
Rods, Insulated	
Complete w/clips No. 1	01-407-07956
No. 2	01-407-07999
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Thimble 2 3/8"	01-407-11939
2-5/8"	01-407-11947
Tip, Manganese	
RH Tip	01-407-00842
LH Tip	01-407-00834
Spike Timber Screw	
3/4" x 6"	01-319-79706

Plates

Plate, Switch	Stock Code No.
J Plate	01 407-08027
K "	01-407-08035
L "	01-407-08043
M "	01-407-08051
N "	01-407-0806X
P "	01-407-08078
R "	01-407-08086
S "	01-407-08094
T "	01-407-08107

Plates

Description	Stock Code No
Plate Extension Offset	02-148-31109
Straight	02-148-31141
Plate Gage	
700D Square	01-407-00148
700 EE "	01-407-00180
700GG Milled LH	01-407-0021X
700GG " RH	01-407-00228
700HH " LH	01-407-00244
700HH " RH	01-407-00252
Plate Slide	
B Plate	01-407-09011
C "	01-407-09089
D "	01-407-09097
G "	01-407-09118

Frogs - Guard Rail		Frog No. 9 RBM	Stock Code No
Rail, Guard 13 Complete W/Plates	Stock code No. 01-420-00700	W/Loose End Plates	01-411-01753
		W/O Loose End Plates	01-411-0177X

(G 87)

Dwg. № C-1700.0 SHEET 7

No. 9 C-2053 and No. 7 C-2056 Turnouts 16'-6" 115# RE C-1700 Insulated 1/2" Reinf.

16'6"
115#
Insulated

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No
Switch, Complete/No 9 T.O	W/O Stock Rails	01-407-00906	W/O Stock Rails	01-407-00914
LH 39' Stock Rail	Bent	08-043-00500	Straight	08-043-00682
RH 39' Stock Rail	Straight	08-043 00623	Bent	08-043-0056X
LH 16'-6" Switch Point	Straight W/O Mang. Tip	01-407-00658	Straight W/O Mang Tip	01-407-00658
RH 16'-6" Switch Point	Straight W/Mang Tip	01-407-00754	Straight W/O Mang.Tip	01-407-00754
LH Two tie Heel Plate	LH Plate	01-407-09150	LH Plate	01-407-09169
RH Two Tie Heel Plate	RH Plate	01-407-09177	RH Plate	01-407-09185

Material

Description	Stock Code No.
Bar, Joint Bent RH	01-407-00615
LH	01-407-00607
Bar Insulated Complete	
3M	01-403-50408
Portec	01-403-50504
Block, heel	01-407-00631
Brace Rail Complete	01-129-09008
Clip SMJ Complete	01-407-0099X
Rods Insulated	
Complete W/Clip No 1	01-407-00850
No. 2	01-407-00869
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2 3/8"	01-407-11939
2 5/8"	01-407-11947

Plates: No. 9 or No. 7 T. O. Stock Code No.

Plate, Switch	No. 9 T.O.	No. 7 T. O.
J. Plate	01-407-08027	01-407-00287
K "	01-407-08035	01-407-00295
L "	01-407-08043	01-407-00308
M "	01-407-08051	01-407-00316
N "	01-407-0806X	01-407-00324
P "	01-407-08078	01-407-00340
R "	01-407-08086	01-407-00359
S "	01-407-08094	
T "	01-407 08107	

Plates: No. 9, No. 7 T. O.

Description	Stock Code No.
Plate, Gage	
Plate A Insulated	01-407-09062
" " Non-Insulated	01-407-09070
Plate, Slide	
B Plate	01-407-09011
C "	01-407-09089
D "	01-407-09097
E "	01-407-09046
G "	01-407-09118

Frogs - Guard Rail		Frog No 9 RBM	Stock Code No.	Frog No. 7 RBM	Stock Code No.
Rail, Guard 13' W/Plates	Stock Code No. 01-420-00700	W/Loose end Plates	01-411-01753	W/Loose End Plates	01-411-06108
		W/O Loose End Plates	01-411-0177X		

Dwg. Nº C-1700.0
SHEET 8

(G 87)

No. 11 Turnout C-2054 | 19'-6" 115# R. E. C-1701 - Insulated | Manual Operation | 19'-6" 115# Insulated

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete	W/O Stock Rails	01-407-01917	W/O Stock Rails	01-407-01968
LH 39' Stock Rail	Curved	08-043-0080X	Straight	08-043-00981
RH 39' Stock Rail	Straight	08-043-00922	Curved	08-043-00869
LH 19-6" Switch Point	Straight W/O Mang. Tip	01-407-01650	Curved W/Mang. Tip	01-407-01626
RH 19'6" Switch Point	Curved W/Mang. Tip	01-407-01722	Straight W/O Mang Tip	01-407-01757
LH Two Tie Heel Plate	LH Plate	01-407-01802	LH Plate	01-407-01810
RH Two Tie Heel Plate	RH Plate	01-407-01829	RH Plate	01-407-01837

Plates	Stock Code No.
Plate, Switch	
J Plate	01-407-01482
K "	01-407-01490
L "	01-407-01503
M "	01-407-01511
N "	01-407-0152X
P "	01-407-01546
Q "	01-407-01554
R "	01-407-01562
S "	01-407-01570

Plates	
Description	
Plate, Gage	
Plate A Insulated	01-407-01431
" " Non-insulated	01-407-08473
Plate, Slide	
B Plate	01-407-0136X
C "	01-407-0144X
D "	01-407-01458
E	01-407-01386
G "	01-407-01474

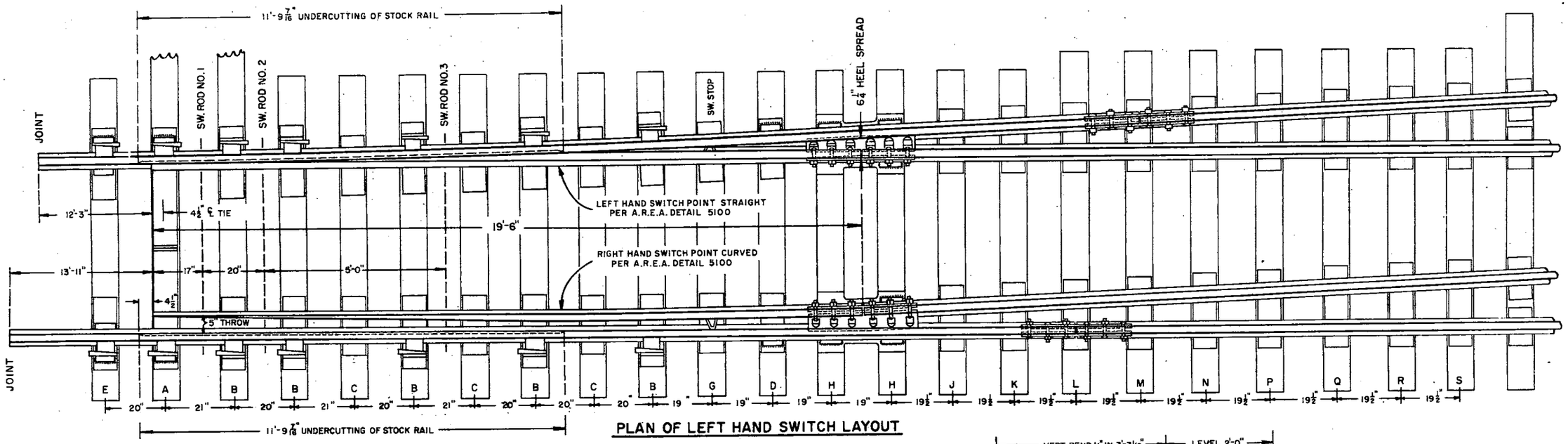
Material	Stock Code No.
Bar, Joint Bent RH	01-407-01298
LH	01-407-0128X
Bar Insulated Complete	
3M	01-403-50408
Portec	01-403-50504
Block, Heel	01-407-01300
Brace, Rail Complete	01-129-09008
Clip, SMJ Complete	01-407-01220
Rods, Insulated Complete	
W/Clips: No. 1	01-407-01319
No. 2	01-407-01327
No 3	01-407 01335
Spike Timber Drive 3/4"	
3/4" X 6"	01-319-87001
Spike Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2-5/16"	01-407-01415
2-1/2"	01-407-01423
Tip, Manganese	
RH Tip	01-407-01271
LH Tip	01-407-01263

Frogs - Guard Rail	Stock Code No.
Rail, Guard 13' Complete W/Plates	01-420-00700

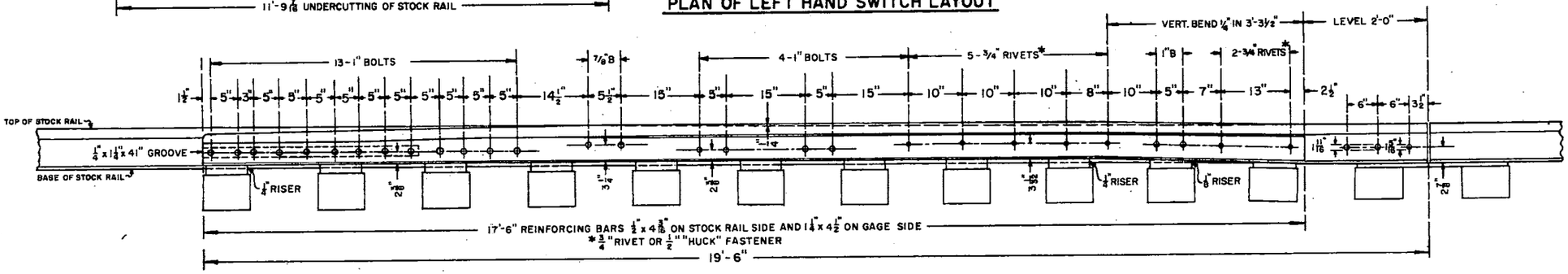
Frog No. 11 RBM	Stock Code No.
W/Loose End Plates	01-411-03951
W/O Loose End Plates	01-411-03978

Dwg. Nº C-1701.0
SHEET 9

(G 87)



PLAN OF LEFT HAND SWITCH LAYOUT



ELEVATION OF SWITCH LAYOUT

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.

SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

ADJUSTABLE MANGANESE SWITCH POINT GUARD.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
115 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JAN 1971

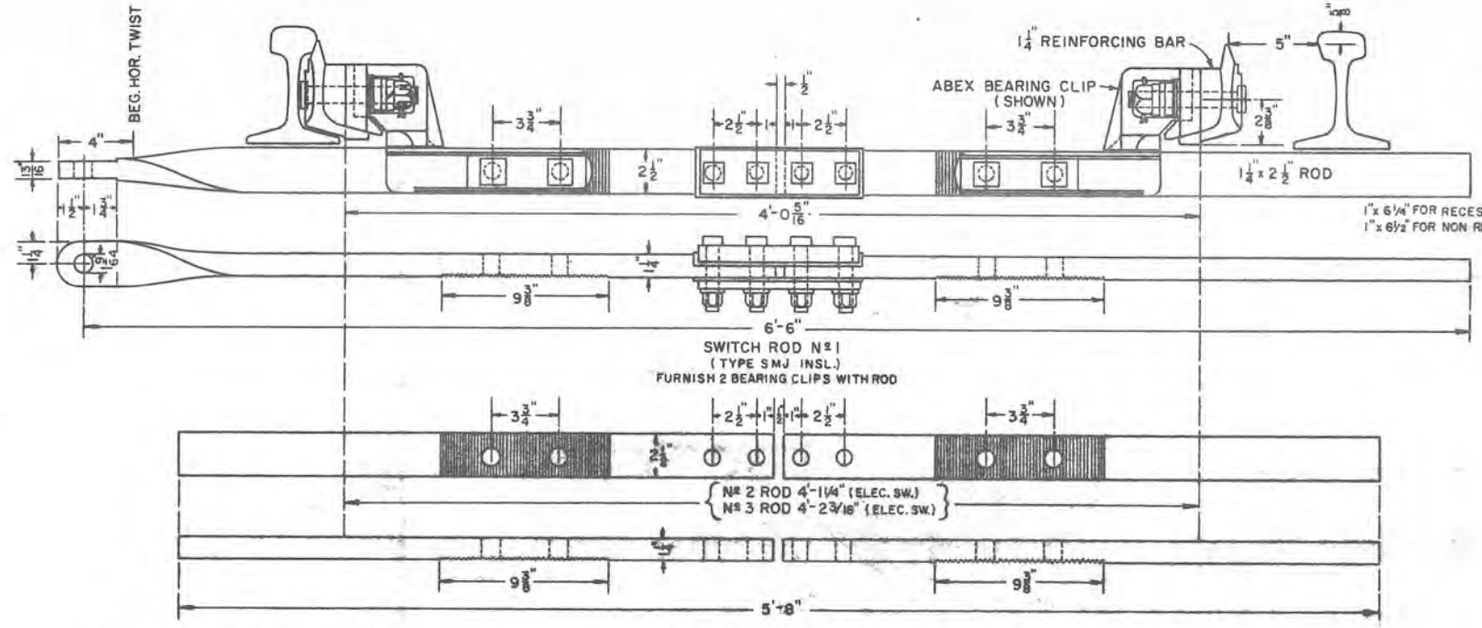
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. M. Lorentzen, Vice President, Operations

Revised 7-71, 12-71, 11-74, 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1701.4

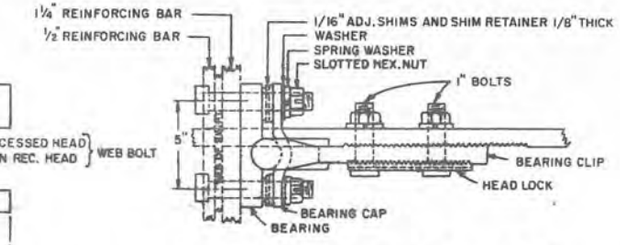
(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1701.5

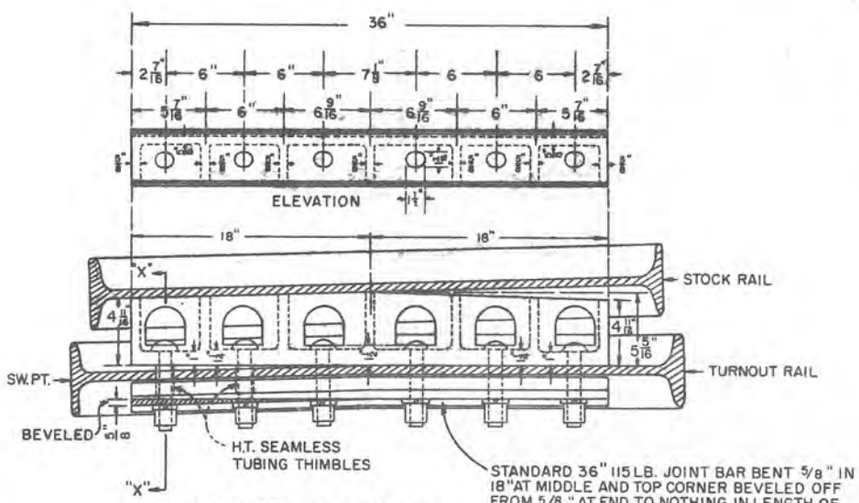


NOTE: *MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITION AS SHOWN ON PLANS.*

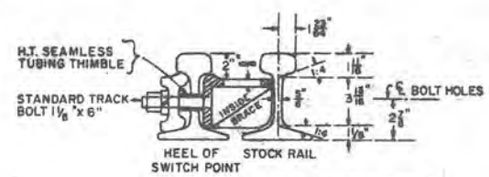
SWITCH RODS Nº 2 & 3
(TYPE SMJ INSL.)
FURNISH 2 BEARING CLIPS WITH EACH ROD



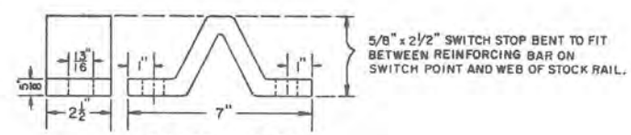
TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)



CAST STEEL HEEL BLOCK



SECTION THRU HEEL BLOCK AT "X-X"



SWITCH STOP

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
115 LB. R.E. RAIL
(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

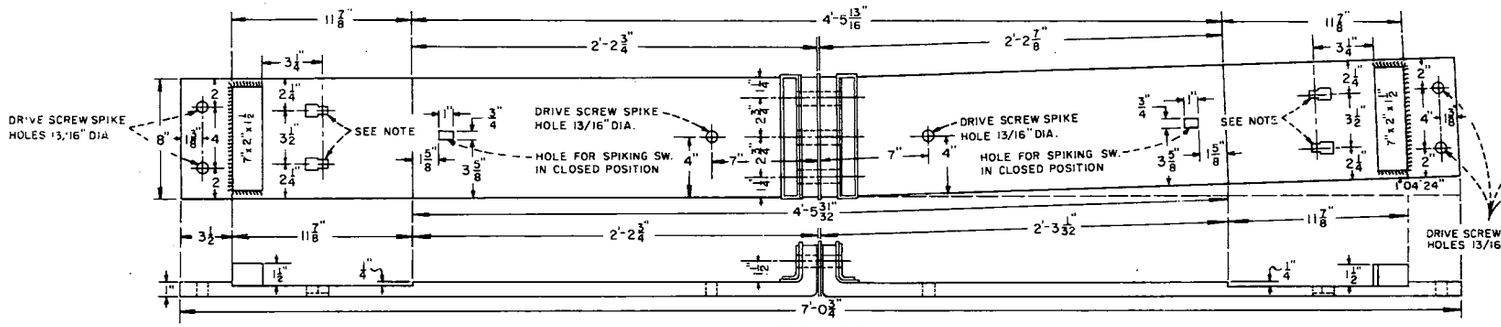
Recommended — Asst Vice President Engineering

Approved — Vice President Operations

Dwg. Nº C-1701.3

THIS PLAN SUPERSEDES PLAN NO. C-1701.2

SHEET 2



GAGE PLATE A (INSULATED TYPE)

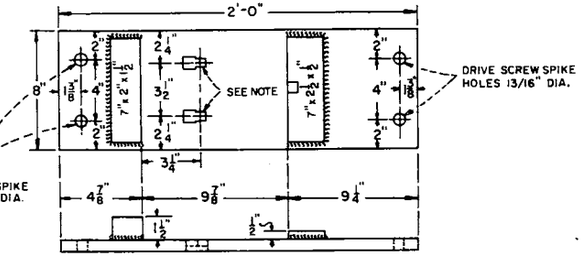


PLATE E

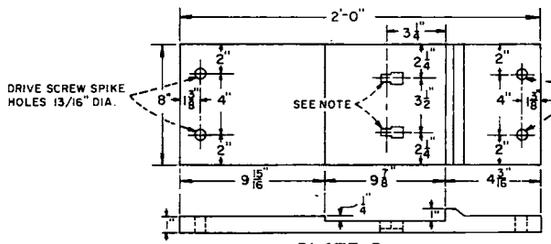
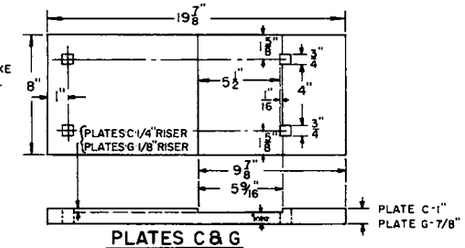


PLATE B



PLATES C & G

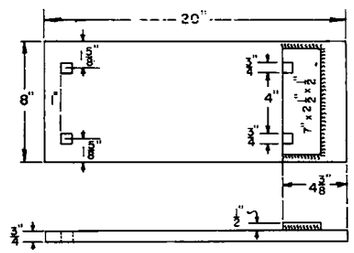
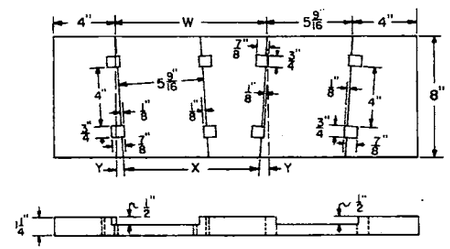
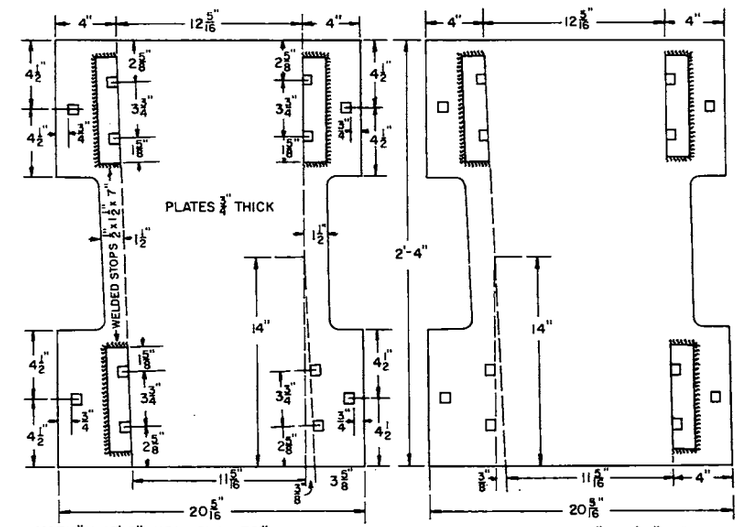


PLATE D



PLATES J, K, L, M, N, P, Q, R, S.

ALL SPIKE HOLES IN PLATES J TO S INCL. 3/4" x 7/8"

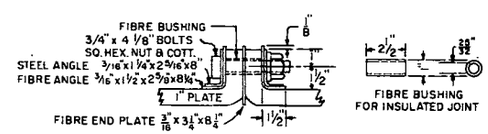


TWO TIE HEEL PLATE H

NOTE:
PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL (THUS 19'-6"A-115)
14 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH.
54 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARDWOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.

TABLE OF DIMENSIONS
PLATES J THRU S

PLATES	W	X	Y
J	7 7/16"	7 1/8"	5/32"
K	8 7/32"	7 29/32"	5/32"
L	9	8 23/32"	9/64"
M	9 27/32"	9 1/2"	11/64"
N	10 23/32"	10 3/8"	11/64"
P	11 9/16"	11 7/32"	11/64"
Q	12 7/16"	12 1/16"	3/16"
R	13 7/16"	13 1/16"	3/16"
S	14 3/8"	13 31/32"	13/64"



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
115 LB. R.E. RAIL
(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

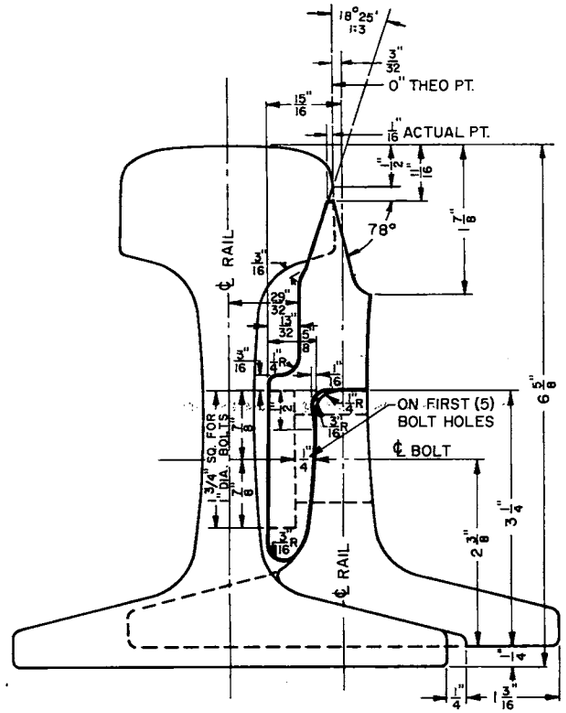
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: D. M. Montgomery, Vice President, Operations

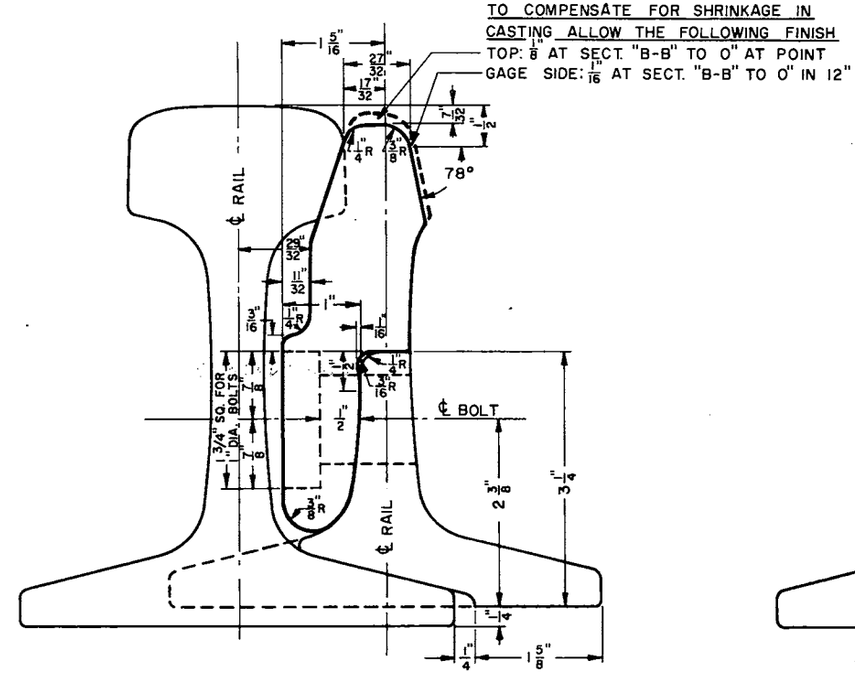
Dwg No C-1701.3

THIS PLAN SUPERSEDES PLAN NO. C-1701.2

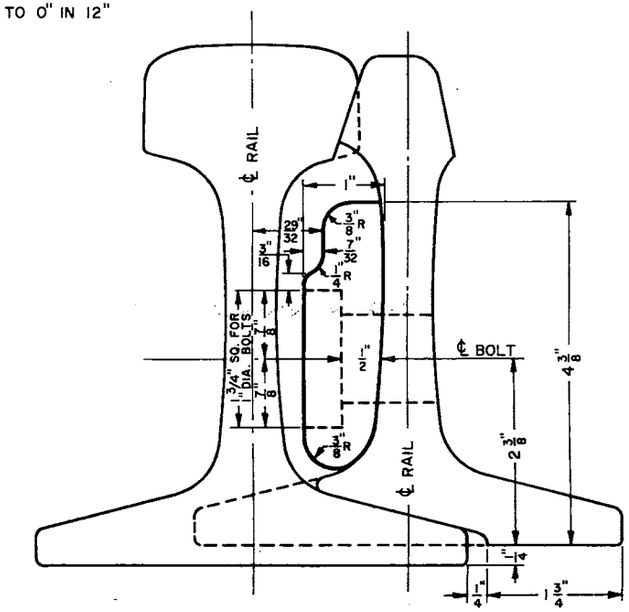
SHEET 3



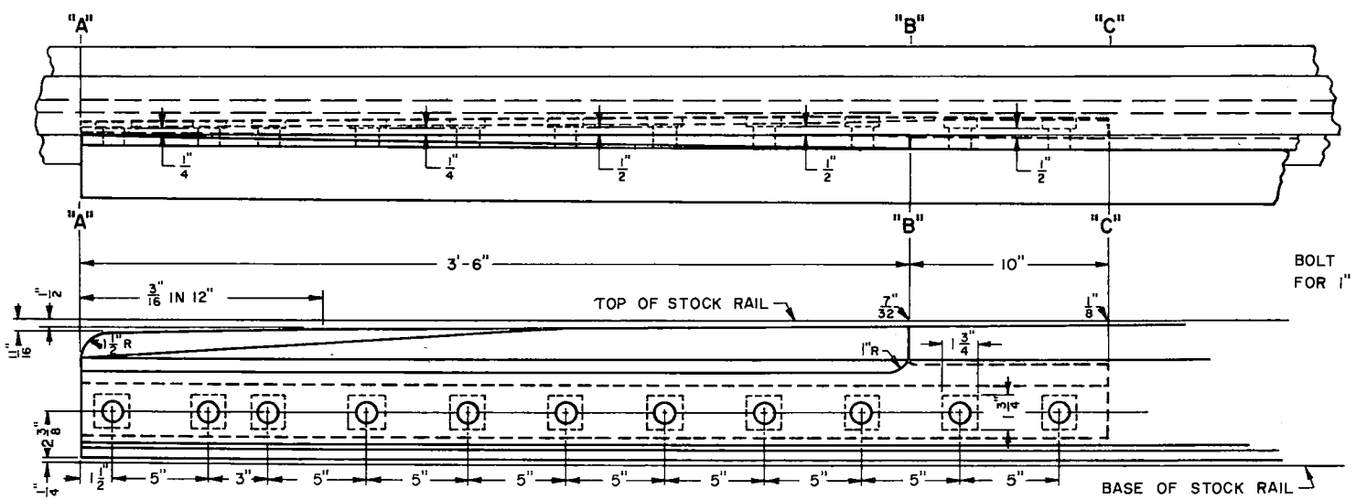
SECTION "A-A"



SECTION "B-B"



SECTION "C-C"



BOLT HOLES CORED 1 1/8" DIA. FOR 1" DIA. BOLTS

L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

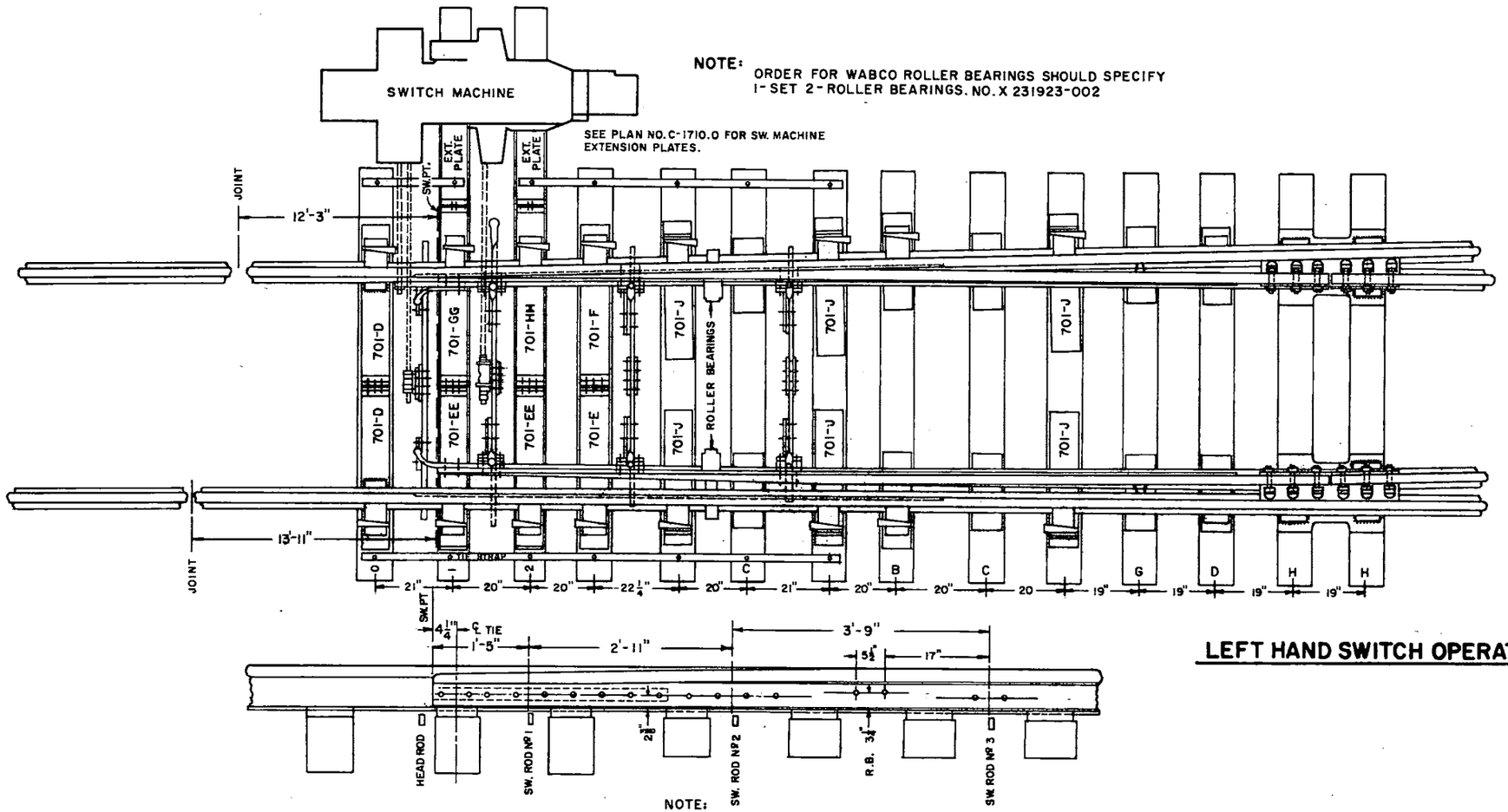
MANGANESE TIPS FOR 115 LB. 19'-6" SWITCH POINTS

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended
Asst. Vice President Engineering

Approved
Vice President, Operations

Dwg. Nº C-1701.0
SHEET 4



NOTE: ORDER FOR WABCO ROLLER BEARINGS SHOULD SPECIFY 1-SET 2-ROLLER BEARINGS. NO. X 231923-002

SEE PLAN NO. C-1710.0 FOR SW. MACHINE EXTENSION PLATES.

LEFT HAND SWITCH OPERATION SHOWN

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 701 SERIES ARE TO BE MARKED THUS 701-GG L.H., 701-HH L.H., ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED.

SURFACE HARDEN STOCK RAILS.

FURNISH 16-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 62-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 14-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

NOTE: BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

ELECTRIC SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN. FOR PLATES B, C, D, G AND H SEE PLAN C-1701.2 SHEET 3

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH 115 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1971

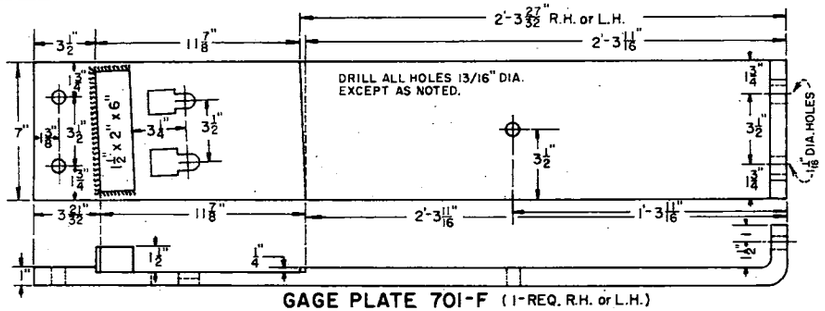
Recommended: B. F. Anderson, Asst. Vice President Engineering

Approved: K. A. Thington, Vice President, Operations

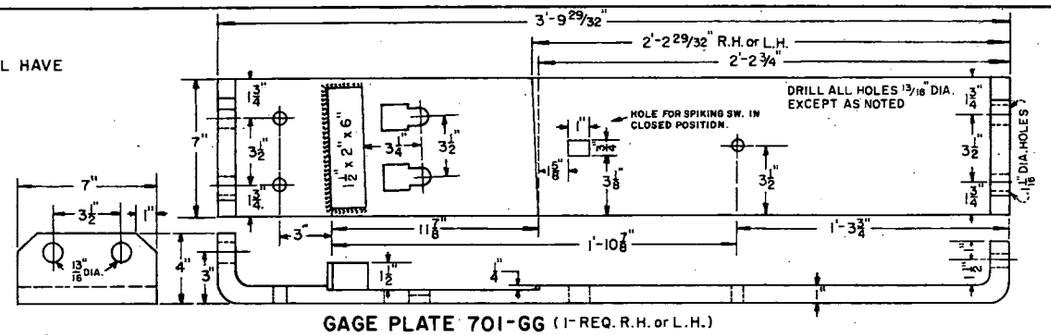
Revised 4-72, 4-73, 4-80, 12-80
THIS PLAN SUPERSEDES PLAN NO. C-1701.3

Dwg. Nº C-1701.4
SHEET 5

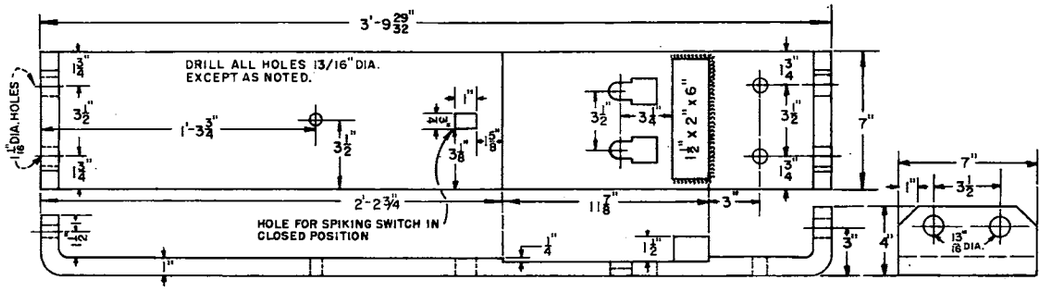
NOTE
ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.



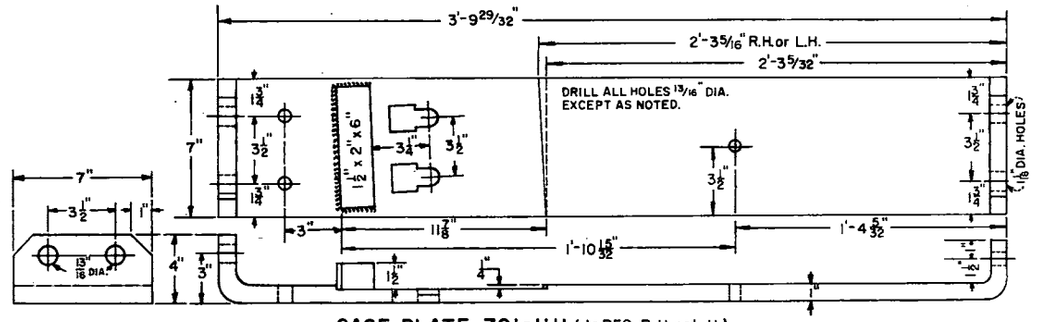
GAGE PLATE 701-F (1-REQ. R.H. or L.H.)



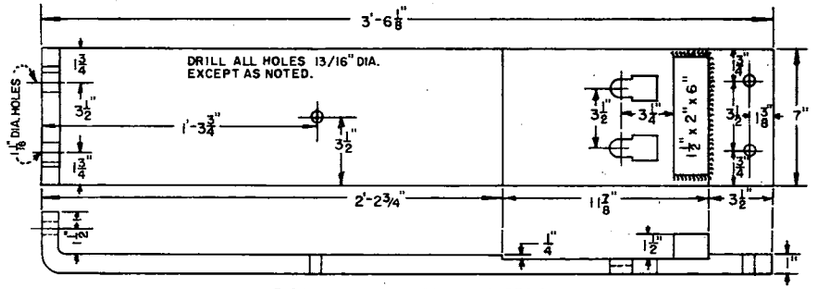
GAGE PLATE 701-GG (1-REQ. R.H. or L.H.)



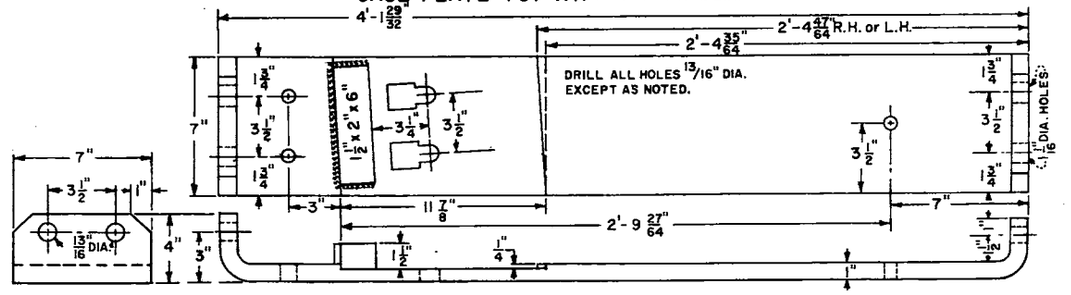
GAGE PLATE 701-EE (2-REQ.)



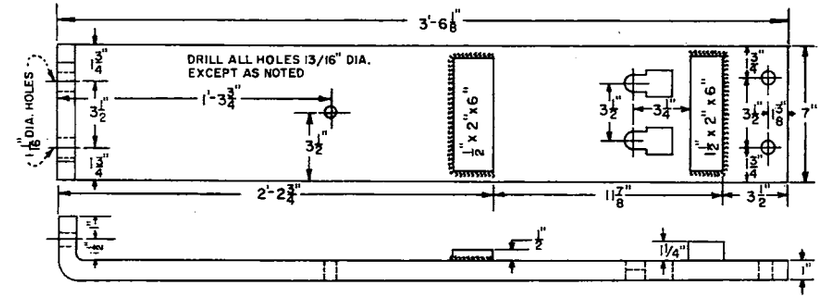
GAGE PLATE 701-HH (1-REQ. R.H. or L.H.)



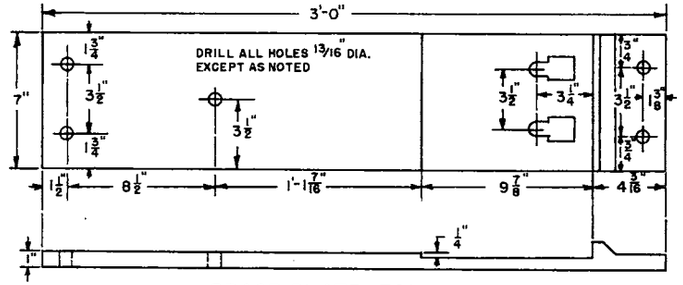
GAGE PLATE 701-E (1-REQ.)



GAGE PLATE 701-K (1-REQ. R.H. or L.H.)
(FOR USE WITH SPRING SWITCH ONLY)



GAGE PLATE 701-D (2-REQ.)



BRACE PLATE 701-J (6-REQ.)

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH
115 LB. R.E. RAIL
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1971

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Revised 6-72, 6-73, 9-74, 10-81
THIS PLAN SUPERSEDES PLAN Nº C-1701.3

Dwg. Nº C-1701.4

SHEET 6

No. 11 Turnout C-2054 — 19'6" - 115# R.E. C-1701-Electric & Spring — 19'-6" 115# Electric

	LH Switch Layout Description	LH Switch Layout Stock Code No.	RH Switch Layout Description	RH Switch Layout Stock Code No
Switch Complete	W/O Stock Rails	01-407-01909	W/O Stock Rails	01-407-0195X
LH 39' Stock Rail	Curved	08-043-0080X	Straight	08-043-00981
RH 39' Stock Rail	Straight	08-043-00922	Curved	08-043-00869
LH 19'6" Switch Point	Straight W/O Mang Tip.	01-407-01650	Curved W/Mang. Tip	01-407-01626
RH 19'6" Switch Point	Curved W/Mang. Tip	01-407-01722	Straight W/O Mang. Tip	01-407-01757
LH Two Tie Heel Plate	LH Plate	01-407-01802	LH Plate	01-407-01810
RH Two Tie Heel Plate	RH Plate	01-407-01829	RH Plate	01-407-01837

Plates

	Stock Code No.
Plate Switch	
J Plate	01-407-01482
K "	01-407-01490
L "	01-407-01503
M "	01-407-01511
N "	01-407-0152X
P "	01-407-01546
Q "	01-407-01554
R "	01-407-01562
S "	01-407-01570

Plates	LH Layout Stock Code No.	RH Layout Stock Code No.
Plates, Gage Bolted		
701D Sq.& 701 D Sq.	01-407-01095	01-407-01095
701E Sq. & 701F	01-407-01247	01-407-01255
701EE & 701GG	01-407-01124	01-407-01159
701EE & 701 HH	01-407-01183	01-407-01212

Plates

Description	Stock Code No
Plate, Extension Offset	02-148-31109
Straight	02-148-31141
Plate, Gage	
701 D Square	01-407-01060
701 E Milled Sq.	01-407-01079
701 EE " "	01-407-01087
701 F " RH	01-407-01116
701 F " LH	01-407-01108
701 GG " RH	01-407-01140
701 GG " LH	01-407-01132
701 HH " RH	01-407-01175
701 HH " LH	01-407-01167
701 J " Square	01-407-01052
Plate, Slide	
B Plate	01-407-0136X
C "	01-407-0144X
D "	01-407-01458
G "	01-407-01474

Material

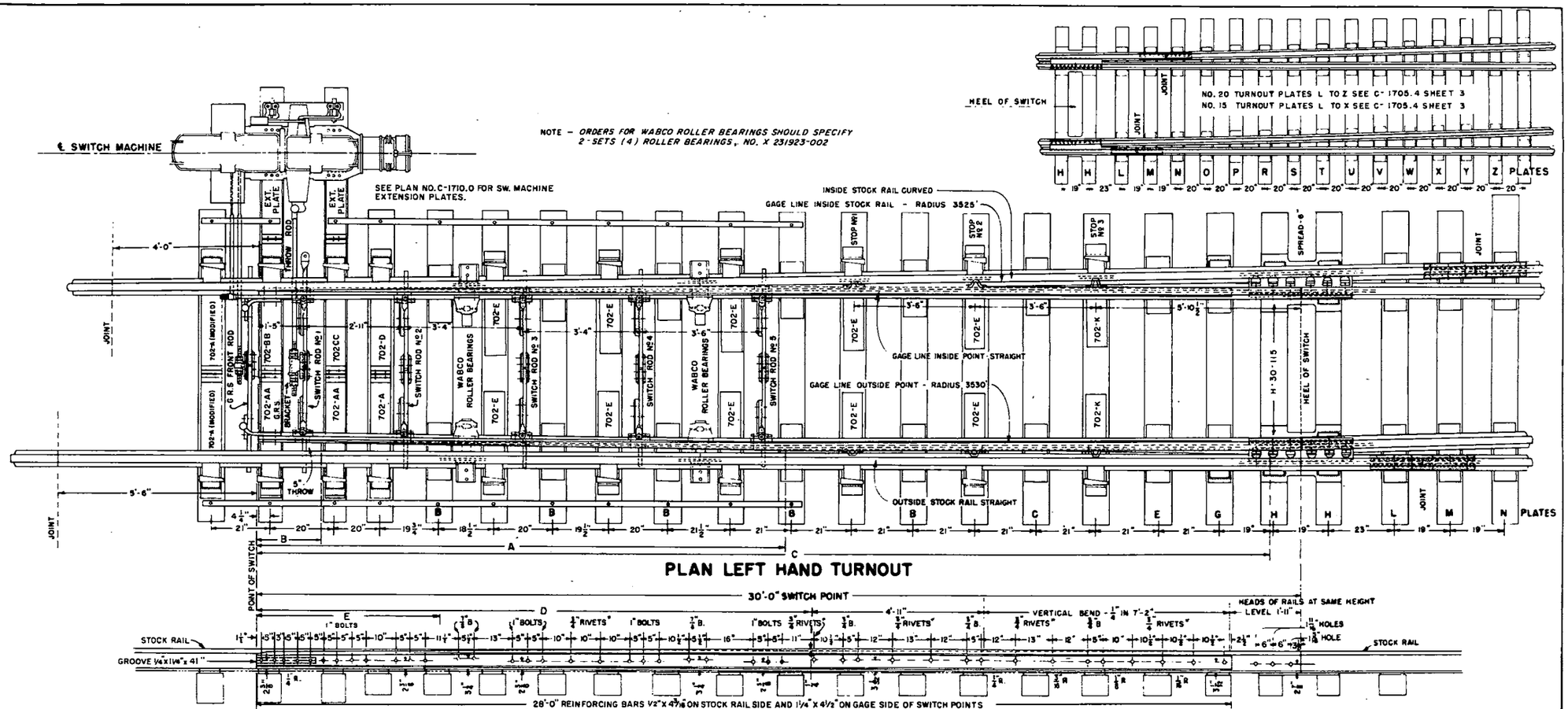
Description	Stock Code No.
Bar, Joint Bent RH	01-407-01298
LH	01-407-0128X
Bar,Insul.Comp. 3M	01-403-50408
Portec	01-403-50504
Bearing, Roller Complete	01-407-01239
Block Heel	01-407-01300
Brace, Rail complete	01-129-09008
Clip, SMJ Complete	01-407-01220
Rods, Insulated Complete W/Clips: No. 1	01-407-01319
No. 2	01-407-01327
No. 3	01-407-01335
Spike, Timber Drive 3/4" X 6"	01-319-87001
Spike, Timber Screw 3/4" X 6"	01-319-79706
Thimble 2-5/16"	01-407-01415
2-1/2"	01-407-01423
Tip, Manganese RH Tip	01-407-01271
LH Tip	01-407-01263
* Spring Switch	
Plate, Extension No. 1 or No. 2	02-148-31213
No. 5	02-148-31256
Plate, Gage 701K Milled RH	01-407-01204
701K " LH	01-407-01191

Frogs - Guard Rail	Stock Code No.
Rail, Guard 13' Complete W/Plates	01-420-00700

Frog No. 11 RBM	Stock Code No.
W/Loose End Plates	01-411-03951
W/O Loose End Plates	01-411-03978

Dwg. Nº C-1701.0 SHEET 8

(G 87)



PLAN LEFT HAND TURNOUT

ELEVATION

ALL BENDING TO BE DONE PRIOR TO PLANING
SIDE OF HEAD PLANING - 1 ST CUT (A) PLANE TO 1/8" THICKNESS AT POINT 1/2" BELOW TOP OF STOCK RAIL HEAD. SIDE CHAMFER (B) PLANE TO 1/16" THICKNESS AT POINT 11/16" BELOW TOP OF STOCK RAIL HEAD ANGLE OF PLANING ON STOCK RAIL SIDE TO CONFORM WITH ANGLE OF UNDERCUT STOCK RAIL HEAD, AND ON GAGE LINE SIDE. 1 ST CUT SHALL HAVE AN ANGLE OF NOT LESS THAN 3°35' WITH VERTICAL AND CHAMFER CUT AN ANGLE OF 12°00' WITH VERTICAL HEAD OR TOP PLANING - 1 ST CUT (D) TO START 15" FROM POINT AND PLANE TO 3/8" BELOW TOP OF STOCK RAIL HEAD AT POINT, 2 ND CUT (E) TO START 5'-4" FROM POINT AND PLANE TO 1/2" BELOW TOP OF STOCK RAIL HEAD AT POINT, 3RD CUT (F) TO START 1'-0" FROM POINT AND PLANE TO 11/16" BELOW TOP OF STOCK RAIL HEAD AT POINT SWITCH POINT TO BE ROUNDED TO A SHARP EDGE WITH A RADIUS OF 1 1/2" BASE PLANING (C) TO CLEAR BASE OF STOCK 1/32" AND WEB OF STOCK RAIL 1/4", SAME TO BE NOTCHED INTO BOTTOM SO AS TO GIVE BEARING ON PLATES WITHIN 1/4" OF STOCK RAIL BASE TWO STOCK RAILS TO BE UNDERCUT AS SHOWN IN SECTION AT POINT

TABLE OF DIMENSIONS		
A	LENGTH OF PLANING ON SIDE OF HEAD (1 ST CUT)	15'-3"
B	LENGTH OF CHAMFER CUT	2'-0"
C	LENGTH OF BASE PLANING	29'-2"
D	LENGTH OF PLANING TOP OF HEAD (1 ST CUT)	16'-0"
E	LENGTH OF PLANING TOP OF HEAD (2 ND CUT)	5'-4"
F	LENGTH OF PLANING TOP OF HEAD (3 RD CUT)	1'-0"

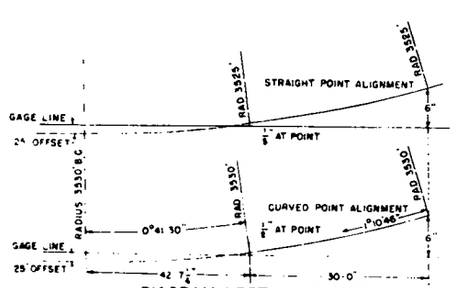
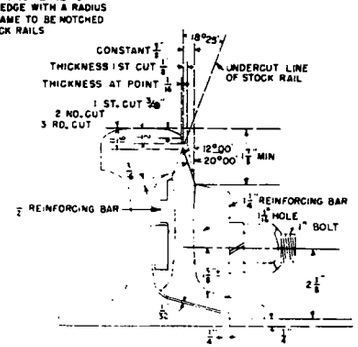


DIAGRAM LEFT HAND SWITCH

Revised 12-71, 3-72, 6-73, 5-75, 7-75, 4-80, 12-80
THIS PLAN SUPERSEDES PLAN Nº C-1702.6



SECTION AT POINT

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 702 SERIES INCLUDING MODIFIED PLATES ARE TO BE MARKED THUS 702-BB L.H., 702-CC L.H. ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED.

SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS

BURLINGTON NORTHERN INC.
STANDARD PLAN

30 FT. CURVED SWITCH
115 LB. R.E. RAIL

(FOR USE WITH NO. 15 OR NO. 20 TURNOUT)

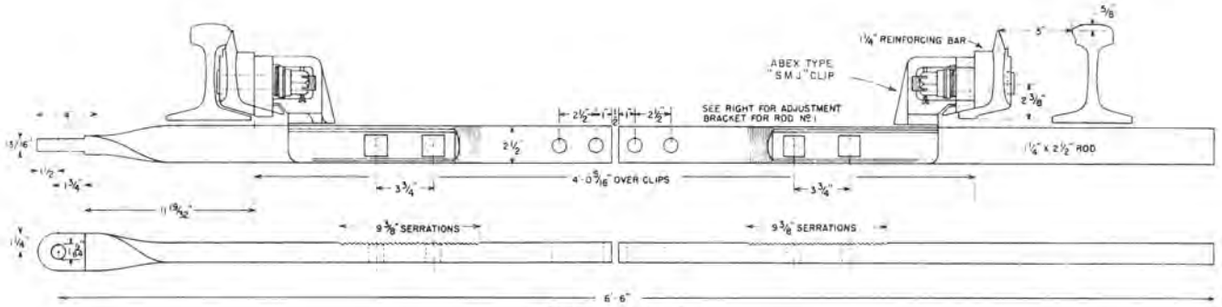
ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended — Asst Vice President Engineering

Approved — Vice President, Operations

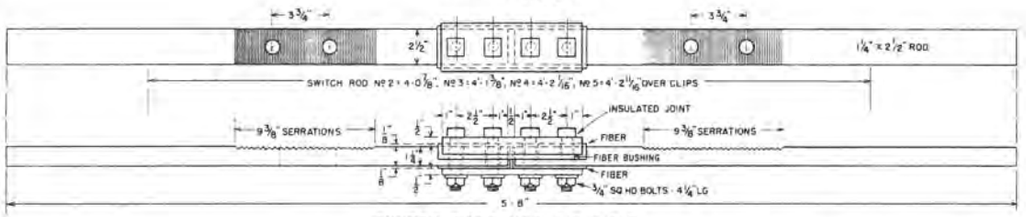
Dwg Nº C-1702.7

SHEET 1



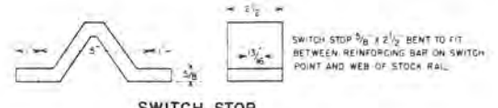
SWITCH ROD NO. 1

INSULATED 1



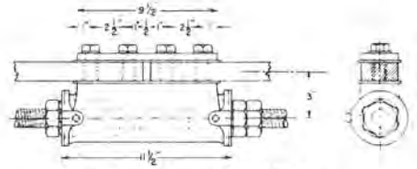
SWITCH RODS NOS. 2, 3, 4 & 5

INSULATED 1

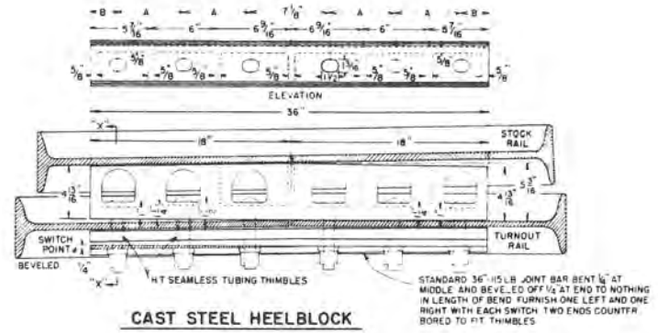


SWITCH STOP

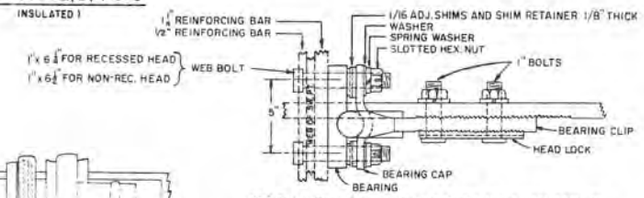
3 REQUIRED



SWITCH ADJUSTMENT BRACKET

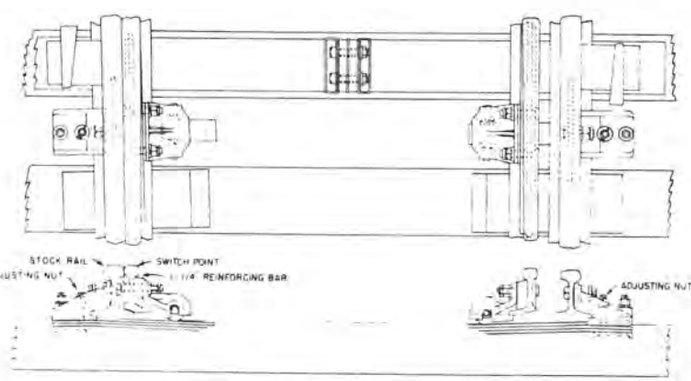


CAST STEEL HEELBLOCK



TOP VIEW OF BEARING CLIP ASSEMBLY

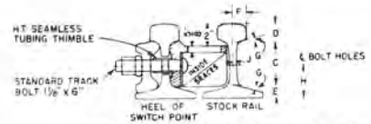
(FURNISH 2 BEARING CLIPS WITH EACH ROD)



UNION SWITCH & SIGNAL CO. ROLLER BEARING

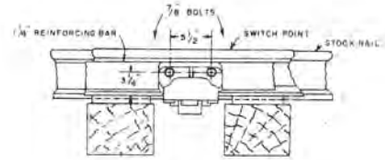
2 SETS - 4 ROLLER BEARINGS 1 REQUIRED

NO. X231923-002



SECTION THROUGH HEEL BLOCK AT "X"-"X"

HEEL BLOCK DIMENSIONS	
A	6"
B	2'-7/16"
C	3'-13/16"
D	1'-11/16"
E	1'-1/8"
F	1'-23/64"
G	1.4
H	2'-7/8"
J	5/16"



BURLINGTON NORTHERN INC.
STANDARD PLAN

30 FT. CURVED SWITCH

115 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCK)

ENGINEERING DIVISION, ST PAUL, MINN MAR. 1972

Recommended: B. H. Cudron, Asst. Vice President Engineering

Approved: N. M. Rosenkjar, Vice President Operations

Revised 6-73, 5-75, 4-80, 12-80
THIS PLAN SUPERSEDES PLAN NO. C-1702-4

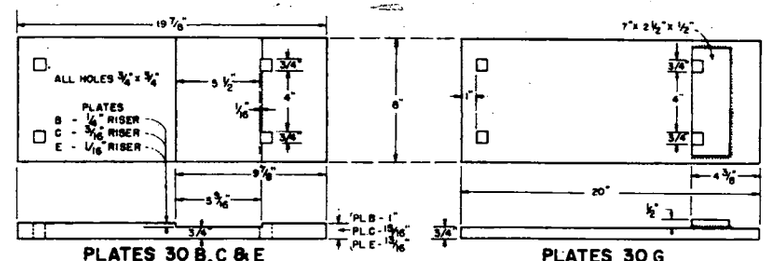
Dwg. NO. C-1702.5

SHEET 2

NOTE:
FOR GAGE PLATES 702-AA, 702-BB AND 702-CC SEE PLAN Nº C-1702.0 Sheet 5.

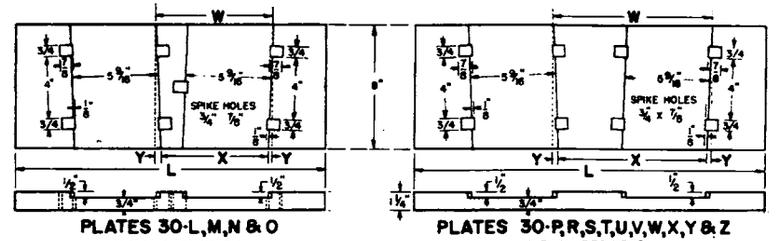
Nº 15 TURNOUT				
DIMENSIONS OF PLATES L TO X				
PLATE	W	X	Y	L
L	6 25/32"	6 19/32"	3/32"	20"
M	7 7/32"	7 1/32"	3/32"	20"
N	7 11/16"	7 15/32"	3/32"	21"
O	8 3/16"	7 31/32"	3/32"	21"
P	8 11/16"	8 15/32"	3/32"	22"
R	9 7/32"	9"	3/32"	22"
S	9 25/32"	9 9/16"	3/32"	23"
T	10 3/8"	10 1/8"	1/4"	23"
U	10 31/32"	10 23/32"	1/4"	24"
V	11 19/32"	11 11/32"	1/4"	24
W	12 7/32"	11 31/32"	1/4"	25
X	12 7/8"	12 5/8"	1/4"	25

Nº 20 TURNOUT				
DIMENSIONS OF PLATES L TO Z				
PLATE	W	X	Y	L
L	6 25/32"	6 19/32"	3/32"	20"
M	7 3/16"	7"	3/32"	20"
N	7 19/32"	7 13/32"	3/32"	20"
O	8 1/16"	7 7/8"	3/32"	20"
P	8 1/2"	8 5/16"	3/32"	22"
R	8 31/32"	8 25/32"	3/32"	22"
S	9 15/32"	9 9/32"	3/32"	22"
T	9 15/16"	9 3/4"	3/32"	22"
U	10 7/16"	10 1/4"	3/32"	22"
V	10 31/32"	10 3/4"	3/32"	24"
W	11 15/32"	11 9/32"	3/32"	24"
X	12"	11 23/32"	3/32"	24"
Y	12 17/32"	12 5/16"	1/8"	25"
Z	13 3/32"	12 7/8"	1/8"	25"



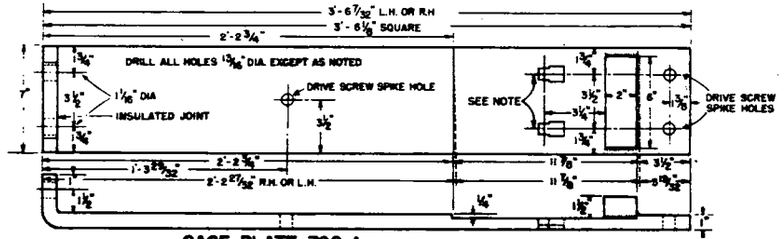
PLATES 30 B, C & E
PLATE B - 10 REQUIRED
PLATES C & E - 2 EACH REQUIRED

PLATES 30 G
2 REQUIRED



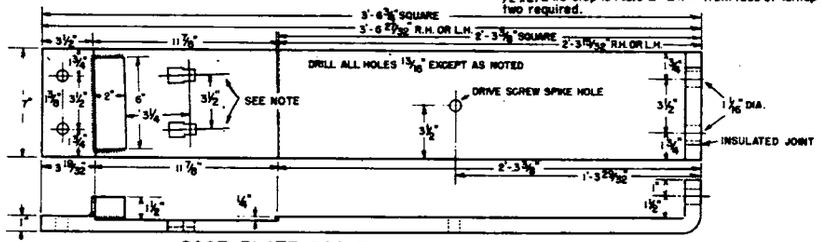
PLATES 30-L, M, N & O
2 EACH REQUIRED

PLATES 30-P, R, S, T, U, V, W, X, Y & Z
2 EACH REQUIRED

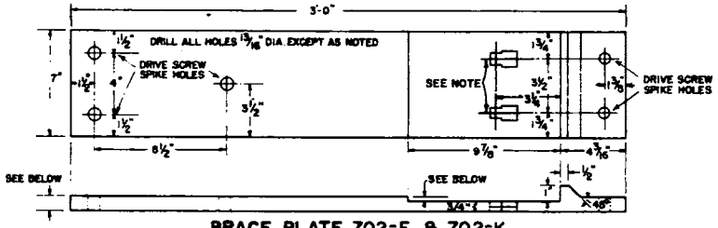


GAGE PLATE 702-A
3-REQUIRED 2-MODIFIED SQ. AND 1 MILLED SQ.

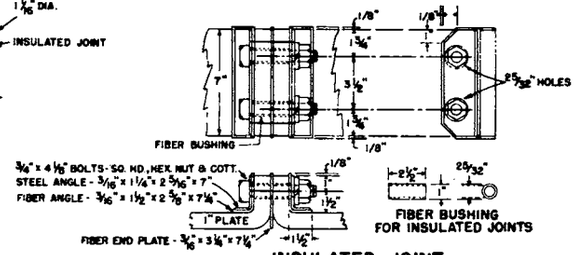
NOTE: For Tie ahead of Switch Point Plate 702-A to be modified by eliminating 1/8" deep mill cut and welding 1/2" x 2 1/2" x 6" stop to Plate 2'-2 3/4" from face of turnup two required.



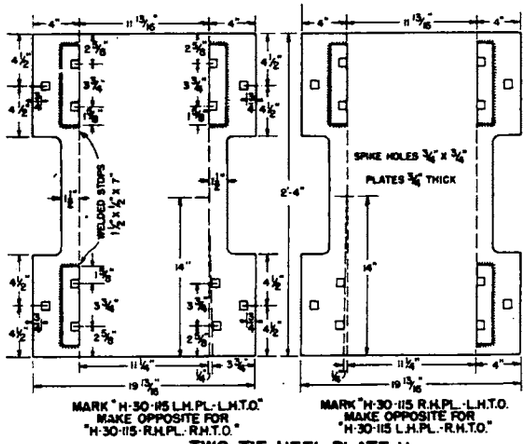
GAGE PLATE 702-D
1-REQUIRED R.H. OR L.H.



BRACE PLATE 702-E & 702-K
10 PIECES 1" x 7" MILL FOR 1/4" RISER-PLATE 702-E
2 PIECES 7/8" x 7" MILL FOR 1/8" RISER-PLATE 702-K



INSULATED JOINT
4 SETS OF PARTS REQUIRED



MARK "H-30-115 L.H.PL.-L.H.T.O." MAKE OPPOSITE FOR "H-30-115-R.H.PL.-R.H.T.O."

MARK "H-30-115 R.H.PL.-L.H.T.O. MAKE OPPOSITE FOR "H-30-115 L.H.PL.-R.H.T.O."

TWO TIE HEEL PLATE H

NOTE:
Slotted Holes to permit top insertion of H.T. Bolts for adjustable rail braces.

ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.

Furnish 22-3/4" x 6" Lag Screws for Tie Straps.
Furnish 90 Drive Screw Spikes 13/16" to 3/4" Dia. Taper Shank x 6" long.
Furnish 20 Security Adjustable Rail Braces, Racor Style 3134-C, with Wedges, Bolts, Nuts and Washers.

NOTE - Bore Ties in field for Drive Screw Spikes 1/2" hole in soft wood ties and 9/16" holes in hardwood ties.

BURLINGTON NORTHERN INC.
STANDARD PLAN

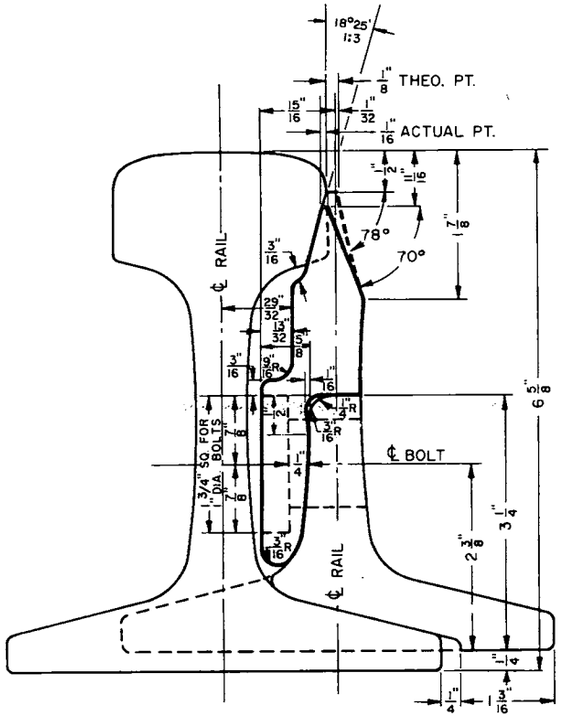
30 FT. CURVED SWITCH
115 LB. R.E. RAIL
(GAGE & TIE PLATES AND INSULATED JOINTS)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended: B. H. Gunderson, Asst. Vice President Engineering
Approved: N. M. Konstantzos, Vice President, Operations

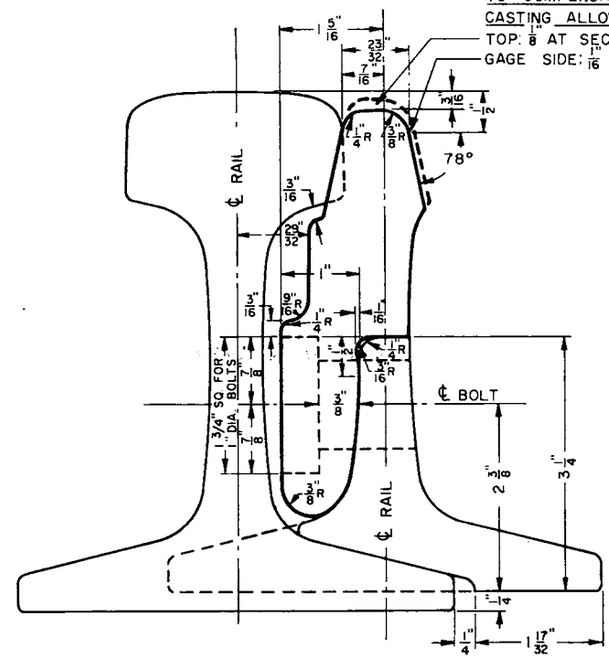
Revised 3-71, 12-71, 3-72, 7-75, 10-76, 10-80, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1702.6

Dwg. Nº C-1702.7
SHEET 3

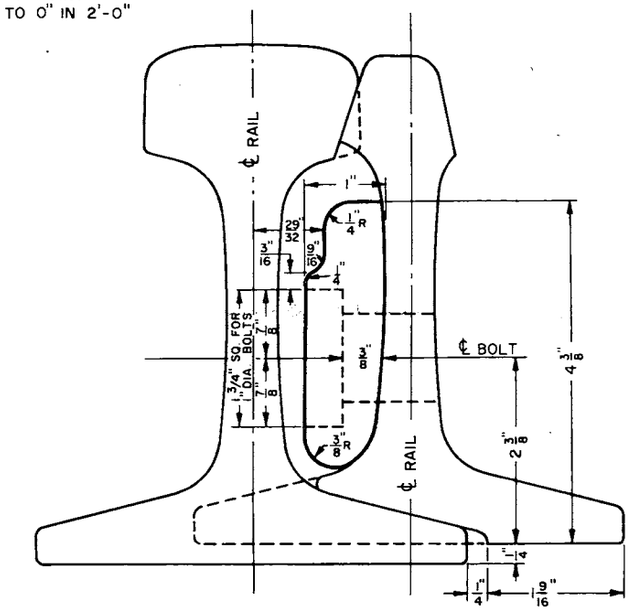


SECTION "A-A"

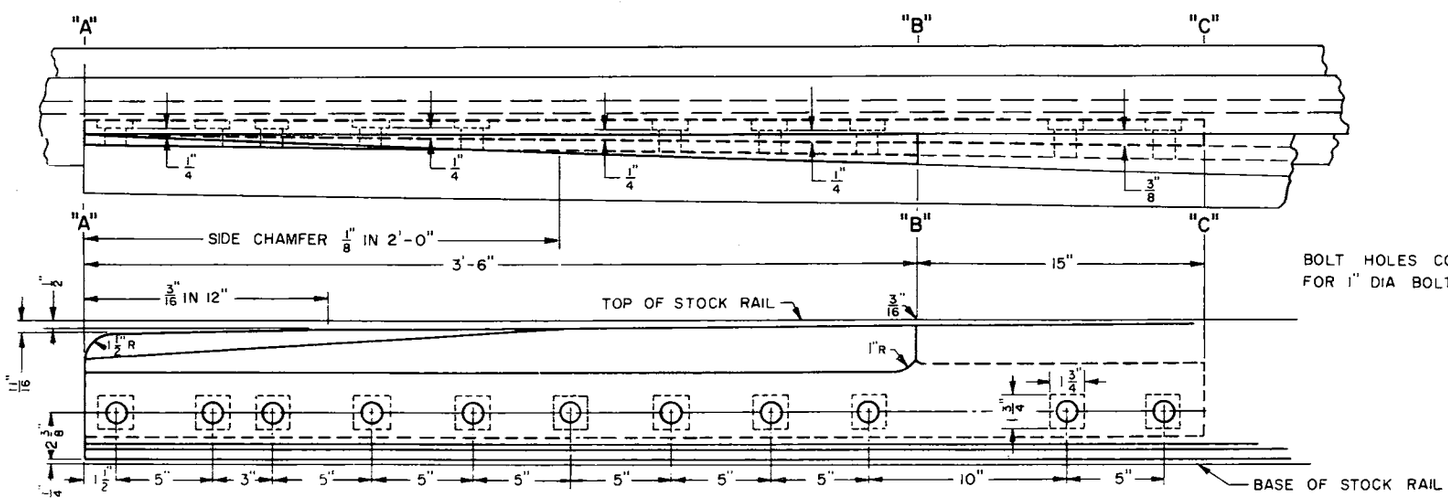
TO COMPENSATE FOR SHRINKAGE IN CASTING ALLOW THE FOLLOWING FINISH
TOP: 1/8" AT SECT. "B-B" TO 0" AT POINT
GAGE SIDE: 1/16" AT SECT. "B-B" TO 0" IN 2'-0"



SECTION "B-B"



SECTION "C-C"



L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

MANGANESE TIPS FOR 115 LB. 30'-0" SWITCH POINTS

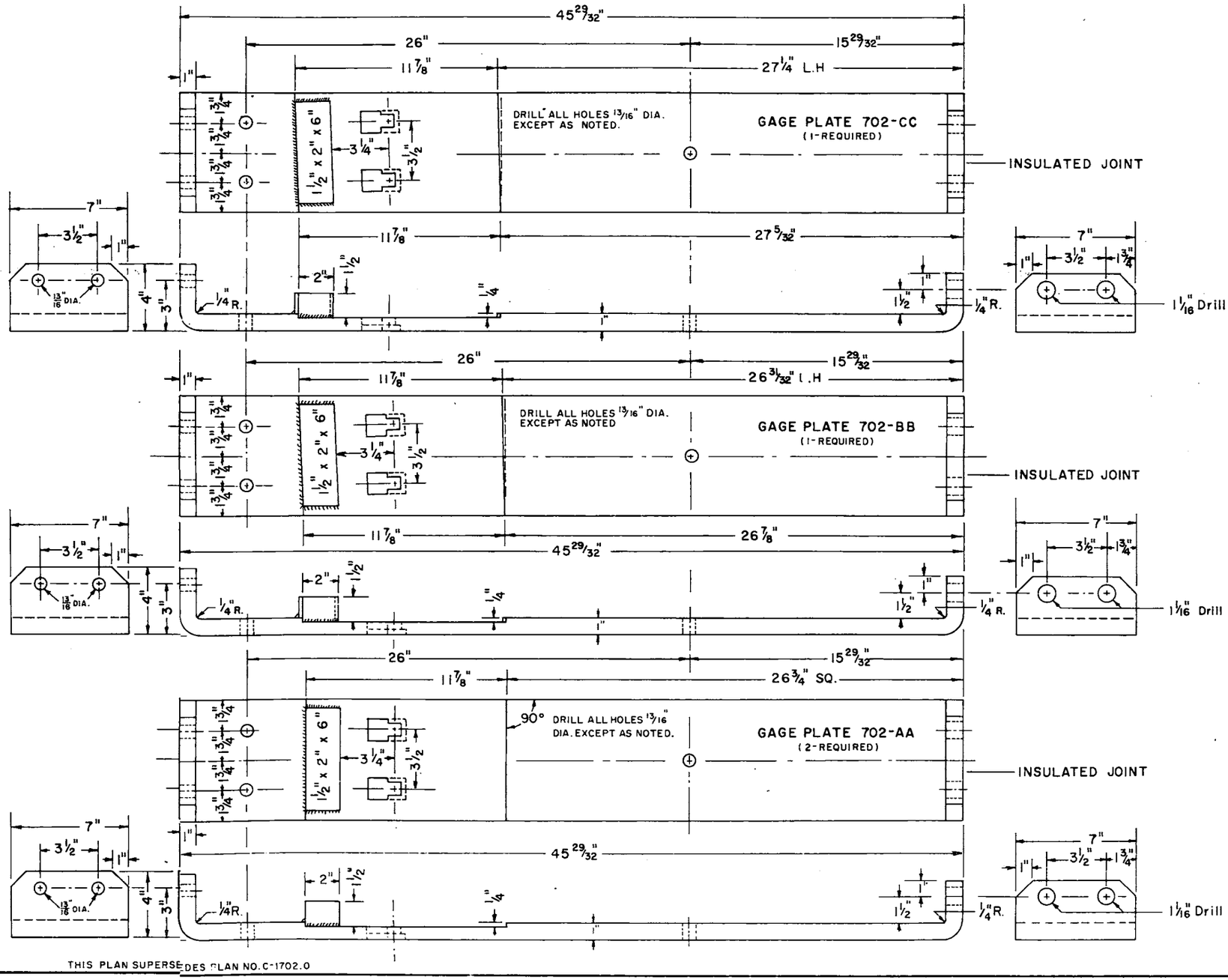
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended: B. H. Anderson, Asst Vice President Engineering

Approved: L. B. Thrington, Vice President, Operations

Dwg № C-1702.0

SHEET 4 OF 4



NOTE:

PLATES 702-BB AND 702-CC SHOWN ARE FOR LEFT HAND TURNOUT MAKE OPPOSITE FOR RIGHT HAND TURNOUT.

BURLINGTON NORTHERN INC.
STANDARD PLAN

30 FT. CURVED SWITCH
115 LB. R.E. RAIL
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973

Recommended: B. H. Quickson, Asst. Vice President Engineering

Approved: H. E. Livingston, Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-1702.0

Dwg. № C-1702.1 Sheet 5

No. 20 (C-2050) and No. 15 (C-2070) Turnout 30' - 115# RE Curved Switch C-1702 - Electric

30'
115 lbs.
Electric

Note: No. 15 and No. 20 30'-0" Switchesare identical except for plates between heel of switch and toe of frog*

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch, Complete No.20 T.O.	W/O Stock Rails	01-407-02856	W/O Stock Rails	01-407-02872
LH 39' Stock Rail	Curved	08-043-01044	Straight	08-043-01167
RH 39' Stock Rail	Straight	08-043-01087	Curved	08-043-01124
LH 30' Switch Point	Straight W/O Mang. Tip	01-407-0224X	Curved W/Mang. Tip	01-407-02223
RH 30' Switch Point	Curved W/Mang. Tip	01-407-02282	Straight W/O Mang. Tip	01-407-02303
LH Two Tie Heel Plate	LH Plate	01-407-02178	LH Plate	01-407-02186
RH Two Tie Heel Plate	RH Plate	01-407-02194	RH Plate	01-407-02207

Material: No. 20 and No. 15 T. O.

Description	Stock Code No.
Bar, Joint Bent RH	01-407-02936
LH	01-407-0291X
Bar Insulated Complete	
3M	01-403-50408
Portec	01-403-50504
Bearing, Roller Complete	01-407-01239
Block Heel	01-407-02952
Brace Rail Complete	01-129-09008
Clip SMJ Complete	01-407-01220
Rods, Insulated Complete	
W/Clips No 1	01-407-05512
No 2	01-407 05520
No. 3	01-407-05539
No 4	01-407-05547
No 5	01-407-05555
Spike, Tbr Drive 3/4"x6"	01-319-87001
Spike Tbr Screw 3/4"x6"	01-319-79706
Strap, Tie Set	02-148-66002
Thimble 2-1/8"	01-407-02629
2-1/4"	01-407-02637
Tip Manganese	
RH Tip	01-407-02434
LH Tip	01-407- 02426

Plates: No. 20 or No. 15 T. O. Stock Code No.

Plates, Switch	*No. 20 T. O.	*No. 15 T. O.
L Plate	01-407-02450	01-407-02450
M Plate	01-407-02469	01-407-02717
N Plate	01-407-02477	01-407-02725
O "	01-407-02485	01-407-02733
P "	01-407-02493	01-407-02741
R "	01-407-02506	01-407-02768
S "	01-407-02514	01-407-02776
T "	01-407-02522	01-407-02784
U "	01-407-02530	01-407-02792
V "	01-407-02549	01-407-02805
W "	01-407-02557	01-407-02813
X "	01-407-02565	01-407-02821
Y "	01-407-02573	
Z "	01-407-02581	

Plates: No. 20, No. 15 T.O.

Description	Stock Code No
Plate, Extension Offset	02-148-31109
Straight	02-148-31141
Plate, Gage	
702A Modified Square	01-407-02012
702A Milled Square	01-407-02039
702AA " "	01-407-02063
702BB " RH	01-407-0208X
702BB " LH	01-407-02071
702CC " RH	01-407-02119
702CC " LH	01-407-02100
702D " RH	01-407-02143
702D " LH	01-407-02135
702E " Square	01-407-01976
702K " "	01-407-01984
Plate, Slide	
B Plate	01-407-0232X
C "	01-407-02338
E "	01-407 02354
G "	01-407-02389

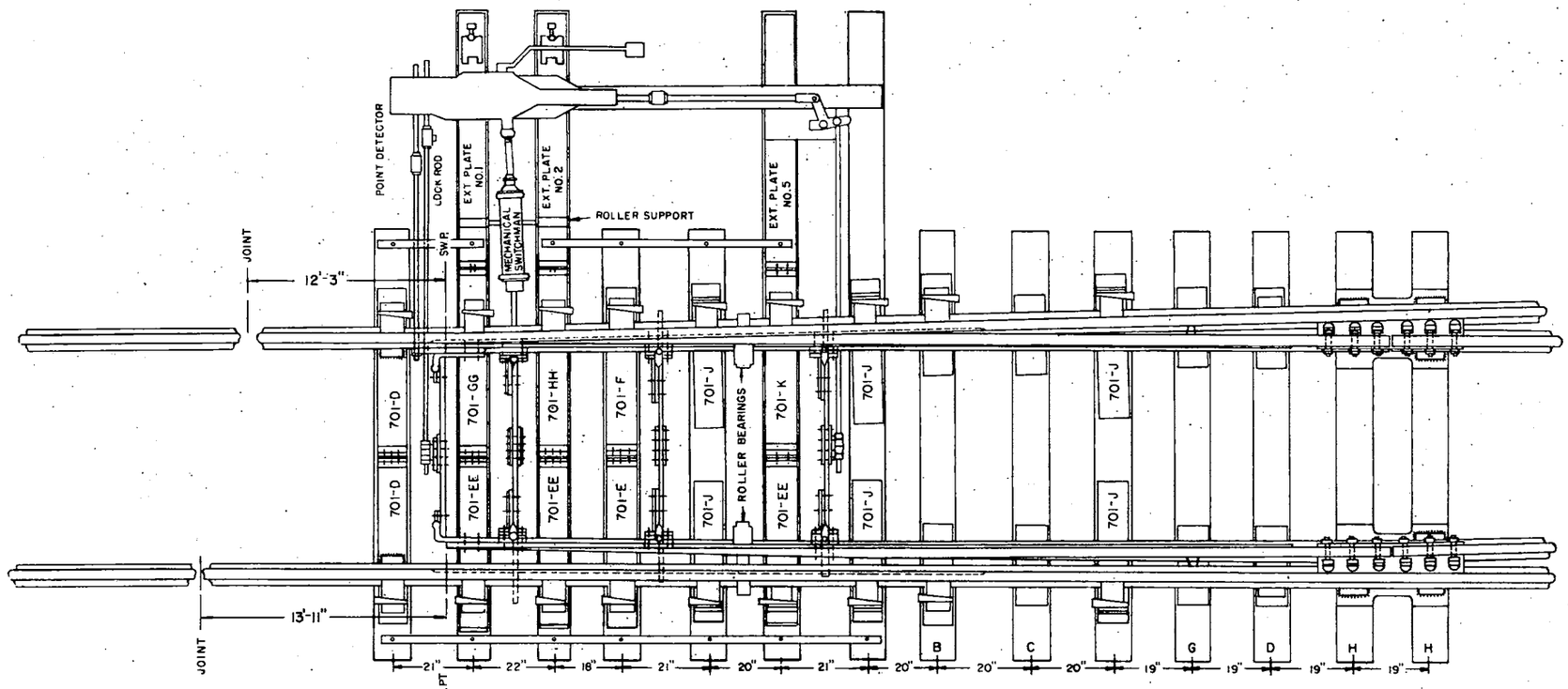
Plates	LH Layout	RH Layout
Plate, Gage Bolted	Stock Code No.	Stock Code No.
702 A & 702 A	01-407-02004	01-407-02004
702 AA Sq.& 702 BB	01-407-02020	01-407-02047
702 AA Sq.& 702 CC	01-407-02055	01-407-02098
702 A Sq. & 702 D	01-407-02127	01-407-0216X

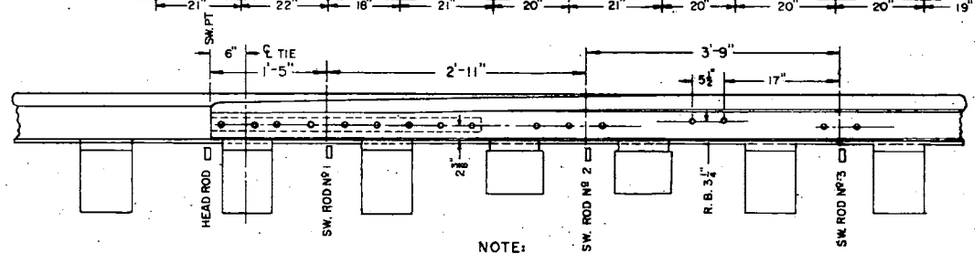
Turnout Material	Stock Code No
Rail Guard Complete w/plates	01-420-01105

	Stock Code No		Stock Code No.
Frog No. 20 RBM W/Loose End Plates	01-411-04209	Frog No 15 RBM W/Loose End Plates	01-411-16250
W/O Loose End Plates	01-411-04225	W/O Loose End Plates	01-411-16277

(G 87)

Dwg. Nº C-1702.0
SHEET 6





LEFT HAND SWITCH OPERATION SHOWN

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 701 SERIES ARE TO BE MARKED THUS 701-GG L.H., 701-HH L.H., ETC. MARK OPPOSITE FOR R.H. SEE PLAN C-1701.3 SHEET 6 FOR DETAILS OF GAGE PLATES

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 SHEET 2

SURFACE HARDEN STOCK RAILS.

FURNISH 18-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 91-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 13-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

NOTE:

BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

SPRING SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN. FOR PLATES B, C, D, G AND H SEE PLAN C-1701.2 SHEET 3

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED SPRING SWITCH
115 LB. R.E. RAIL

WITH MECH. SWITCHMAN & FACING POINT LOCK

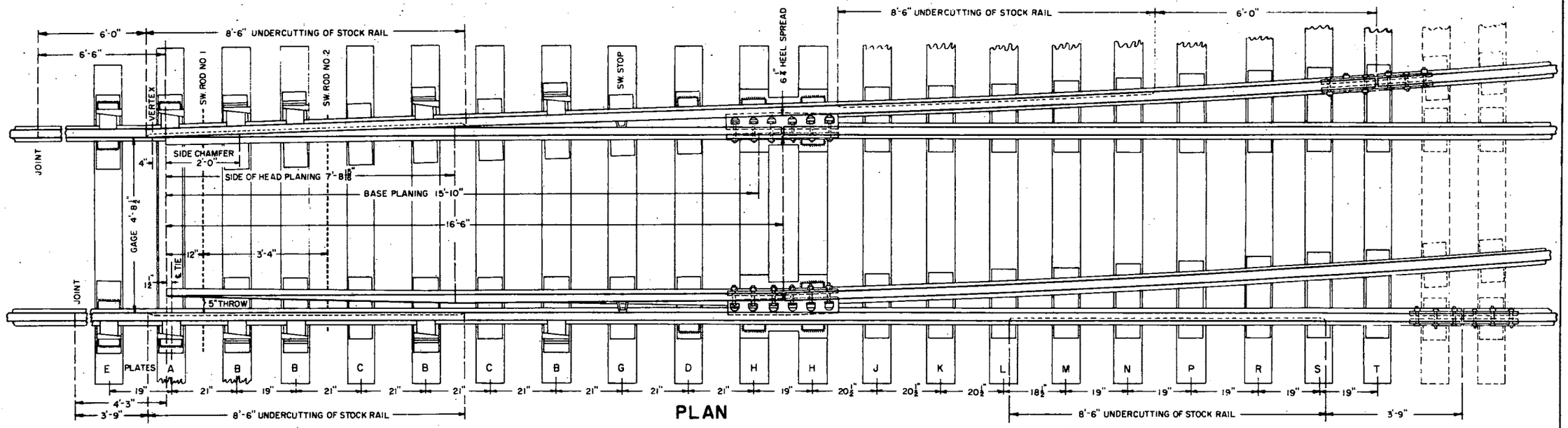
ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1974

Recommended — Asst. Vice President Engineering

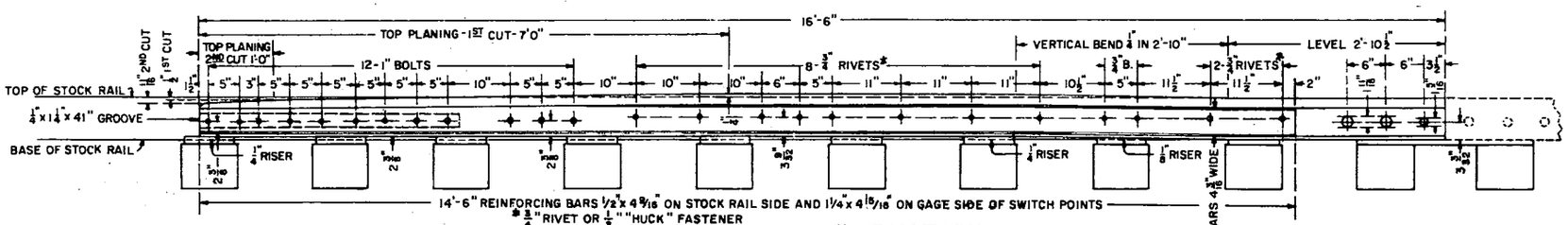
Approved — Vice President Operations

Dwg Nº C-17010

SHEET 7



PLAN



ELEVATION

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.

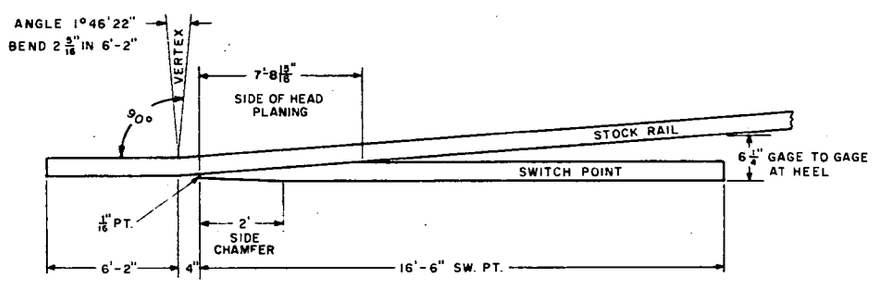
SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

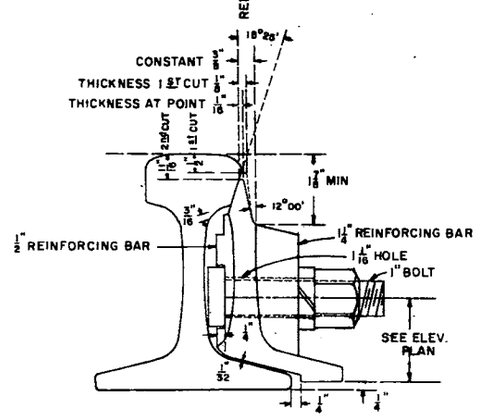
WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

MANGANESE TIP INSERTS.
ADJUSTABLE MANGANESE SWITCH POINT GUARD.



DETAIL OF STOCK RAIL BENDING AND SWITCH ANGLE



SECTION AT POINT

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH
132 LB. R.E. RAIL (UNDERCUT)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

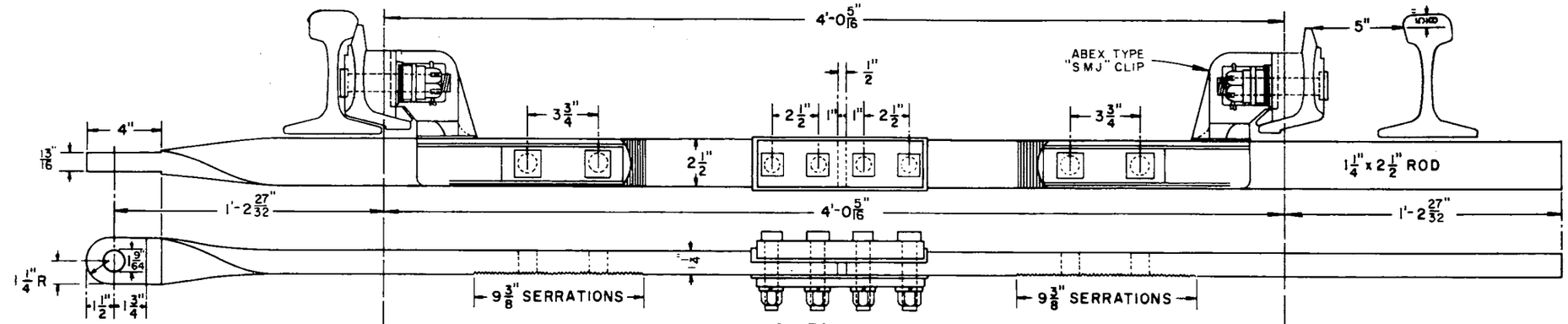
Recommended: B. G. Anderson, Asst. Vice President Engineering

Approved: R. M. Bennett, Vice President, Operations

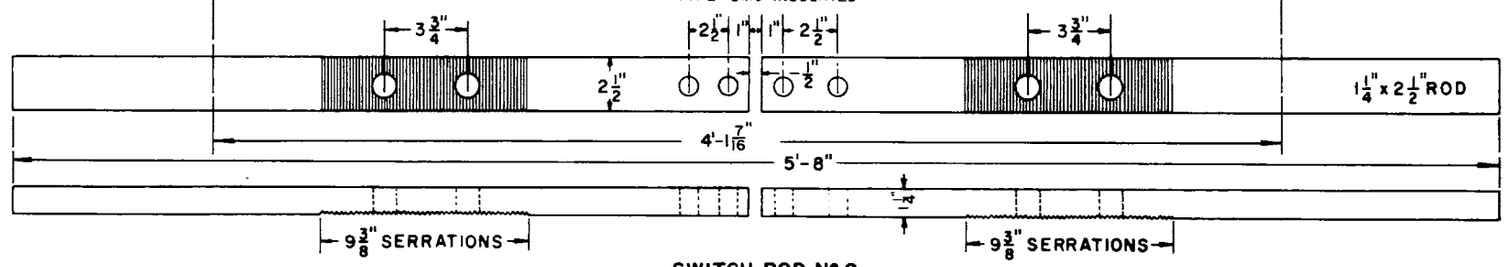
Revised 8-71, 4-72, 5-75, 10-81
THIS PLAN SUPERSEDES PLAN Nº C-1703.3

(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1703.4
SHEET 1

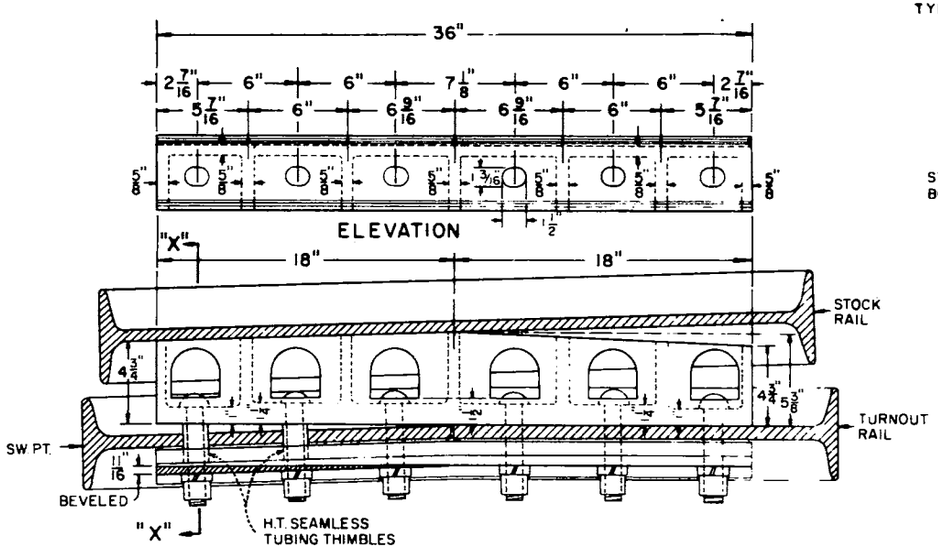


SWITCH ROD Nº 1
TYPE "SMJ" INSULATED



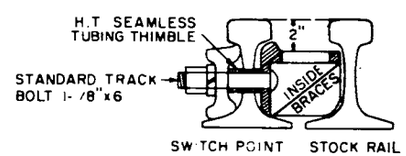
SWITCH ROD Nº 2
TYPE "SMJ" INSULATED

NOTE:
MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITIONS AS SHOWN ON PLANS.

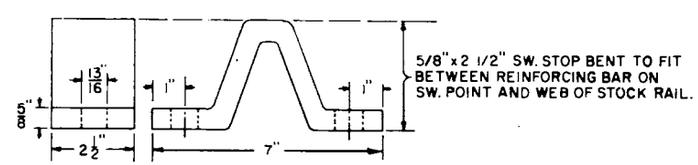


STANDARD 36" 132 LB. JOINT BAR BENT 11/16" IN 18" IN MIDDLE AND TOP CORNER BEVELED OFF FROM 11/16" AT END TO NOTHING IN LENGTH OF BEND. ONE LEFT AND ONE RIGHT WITH EACH SWITCH. 2 END HOLES COUNTERBORED TO FIT THIMBLE.

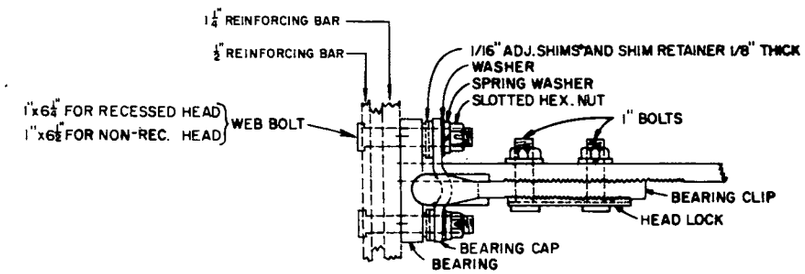
CAST STEEL HEEL BLOCK



SECTION THRU HEEL BLOCK AT "X"-"X"



SWITCH STOP



TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 132 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

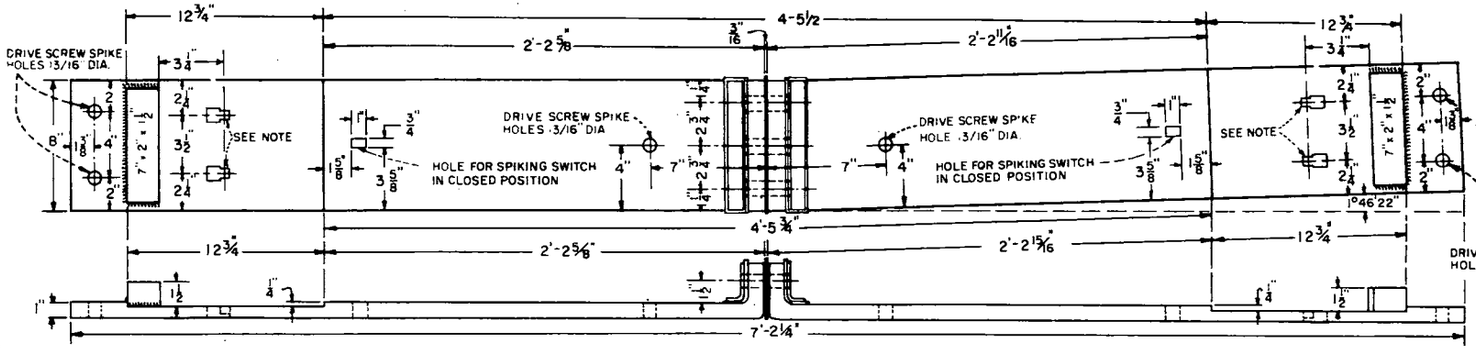
Recommended: B.H. Anderson — Asst. Vice President Engineering

Approved: R. M. Rountree — Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-1703.0

Dwg. Nº C-1703.1

SHEET 2



GAGE PLATE A (INSULATED TYPE)

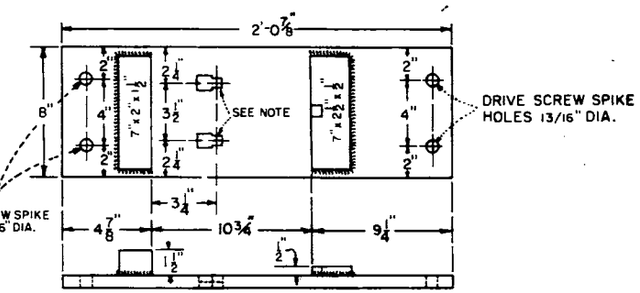


PLATE E

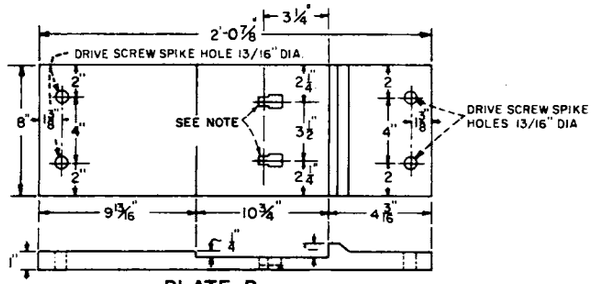
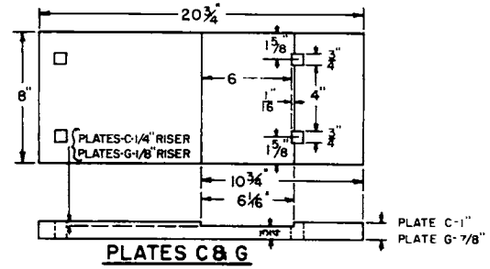


PLATE B



PLATES C & G

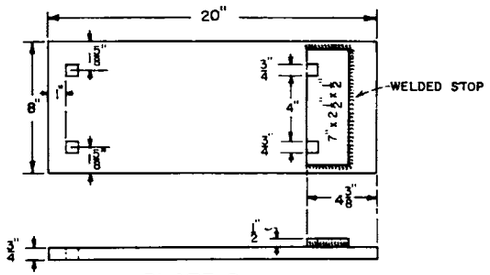
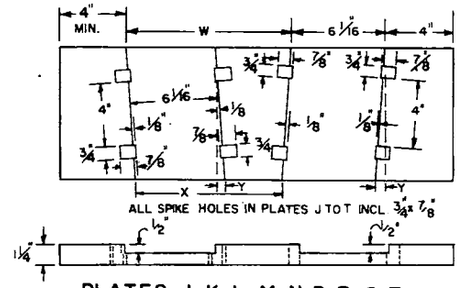
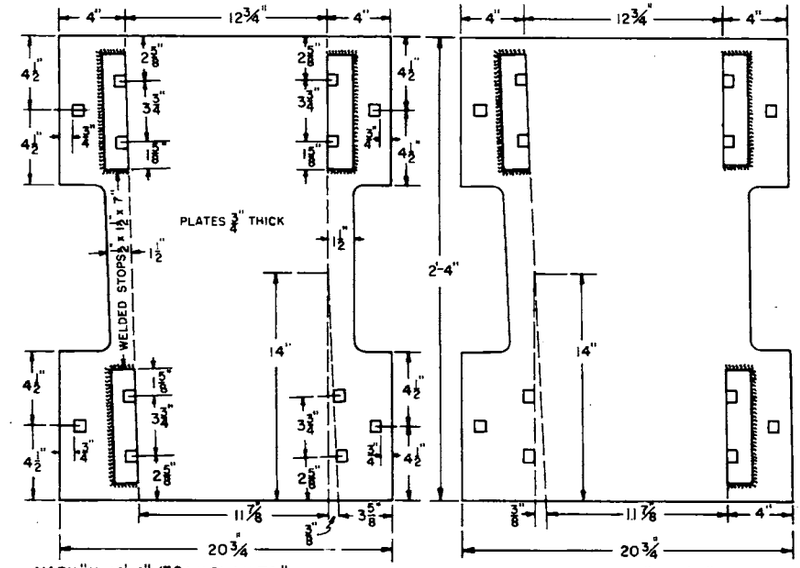


PLATE D



PLATES J, K, L, M, N, P, R, S, T.



MARK "H-16'-6"-132 LH.PL.LH.T.O." MAKE OPPOSITE FOR "H-16'-6"-132 RH.PL.RH.T.O."

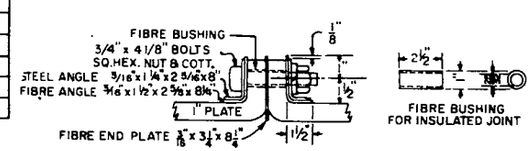
TWO TIE HEEL PLATE H

MARK "H-16'-6"-132 RH PL.LH.T.O." MAKE OPPOSITE FOR "H-16'-6"-132LH.PL.RH.T.O."

NOTE:

PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL (THUS 16-6-A-132)
12 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH.
46 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG. TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARD WOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.

DIMENSIONS OF PLATES J THRU T						
	NO. 7 T.O.			NO. 9 T.O.		
PLATE	W	X	Y	W	X	Y
J	7 7/16"	7 3/16"	5/32"	7 5/16"	7 1/16"	1/8"
K	8 5/16"	7 15/16	3/16"	8"	7 3/4"	1/8"
L	9 1/4"	8 7/8"	3/16"	8 3/4"	8 1/2"	1/8"
M	10 3/16"	9 3/4"	7/32"	9 1/2"	9 3/16"	5/32"
N	11 3/16"	10 3/4"	7/32	10 1/4"	9 7/8"	3/16"
P	12 5/16"	11 13/16"	1/4"	11 3/16"	10 7/8"	5/32"
R	13 1/2"	13"	1/4"	12 3/16"	11 3/4"	7/32
S				13 3/16"	12 11/16"	1/4"
T				14 1/8"	13 11/16"	7/32"



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 132 LB. R.E. RAIL

(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST PAUL, MINN. MAY 1975

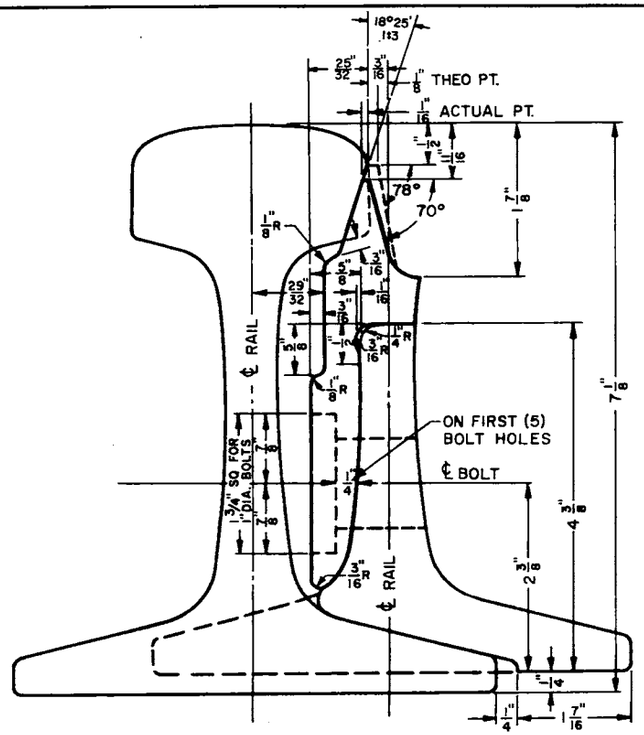
Recommended: B.H. Anderson — Asst Vice President Engineering

Approved: N. M. Lorentzen — Vice President, Operations

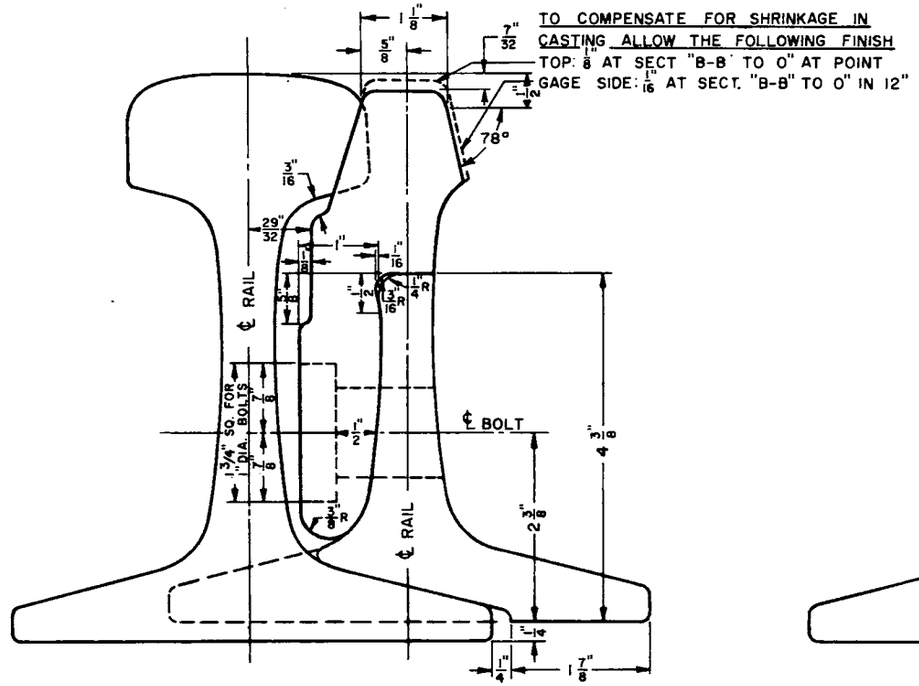
Dwg. No C-1703.3

THIS PLAN SUPERSEDES PLAN NO. C-1703.2

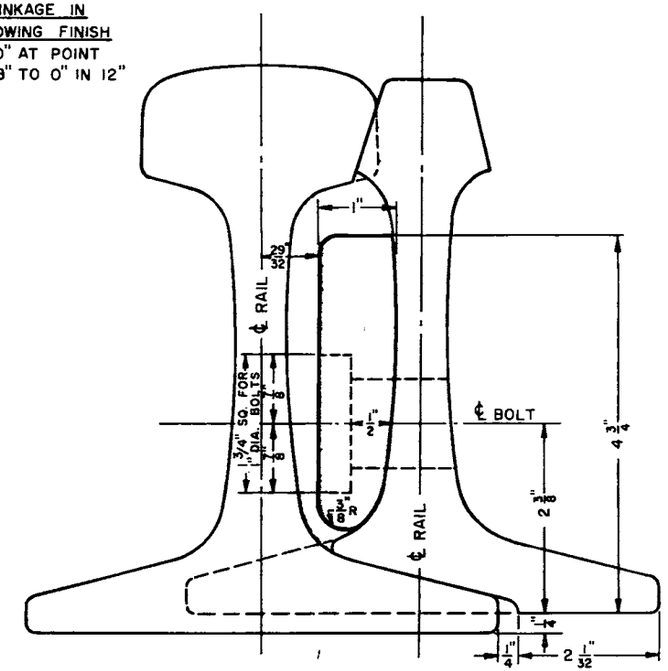
SHEET 3



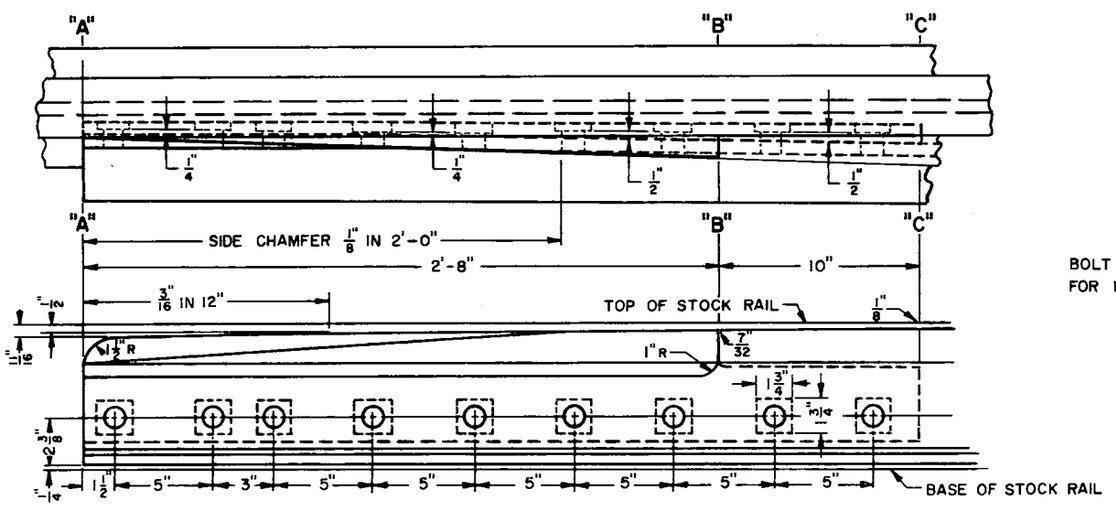
SECTION "A-A"



SECTION "B-B"



SECTION "C-C"



L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

BOLT HOLES CORED 1 1/8" DIA. FOR 1" DIA. BOLTS

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

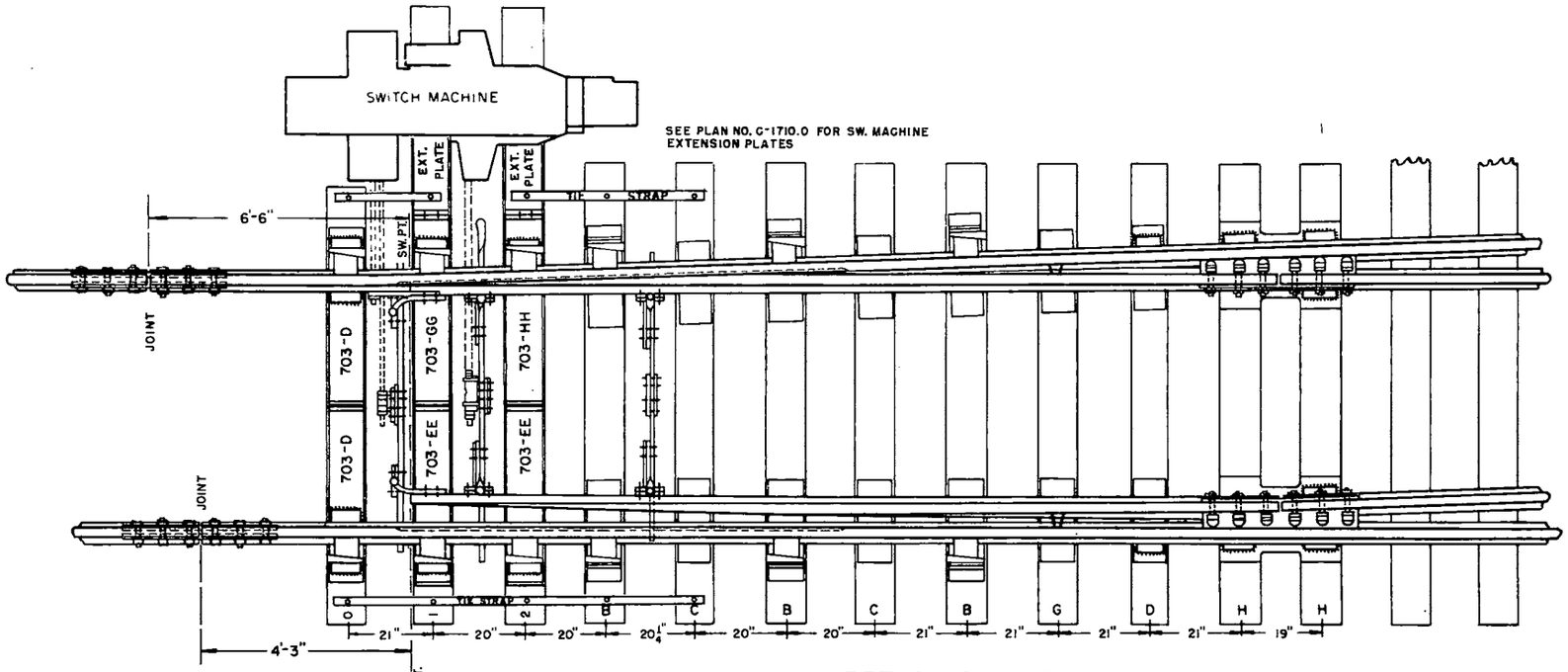
MANGANESE TIPS FOR 132 LB. 16'-6" SWITCH POINTS

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: S. G. Pinington, Vice President, Operations

Dwg № C-1703.0
SHEET 4



LEFT HAND SWITCH OPERATION SHOWN

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 703 SERIES ARE MARKED THUS 703GG L.H., 703HH L.H. ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED

SURFACE HARDEN STOCK RAILS.

FURNISH 12-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 62-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 10-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

NOTE:

BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

ELECTRIC SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN FOR TIES 0, 1 AND 2.

BURLINGTON NORTHERN INC.
STANDARD PLAN

16'-6" STRAIGHT ELECTRIC SWITCH
132 LB. R.E. RAIL (UNDERCUT)

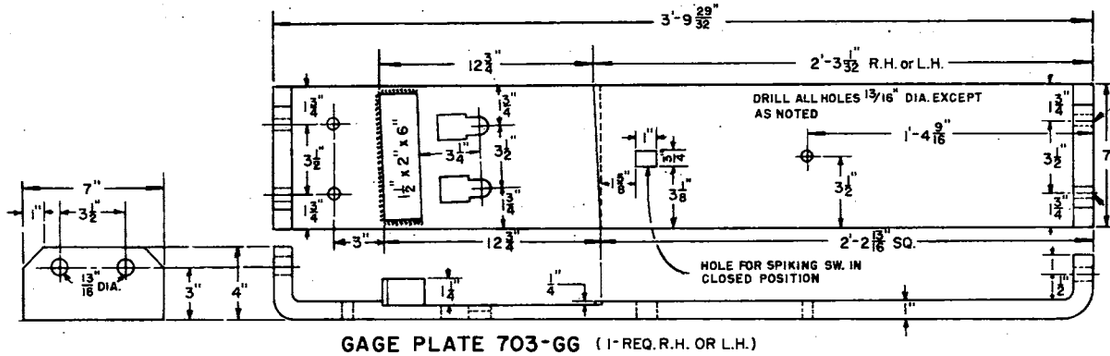
ENGINEERING DIVISION, ST. PAUL, MINN. AUG. 1971

Recommended — Asst. Vice President Engineering

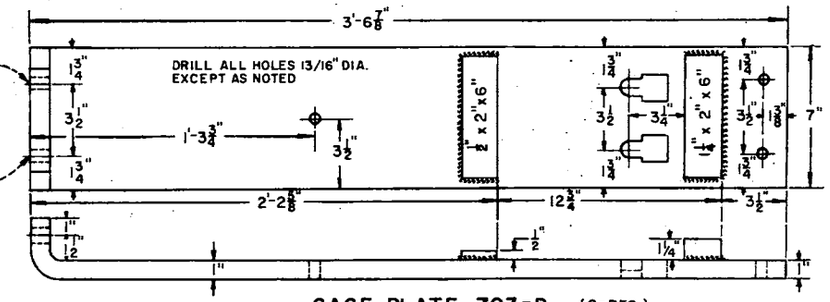
Approved — Vice President, Operations

Revised 10-72, 6-73, 4-80
THIS PLAN SUPERSEDES PLAN NO. C-1703.2

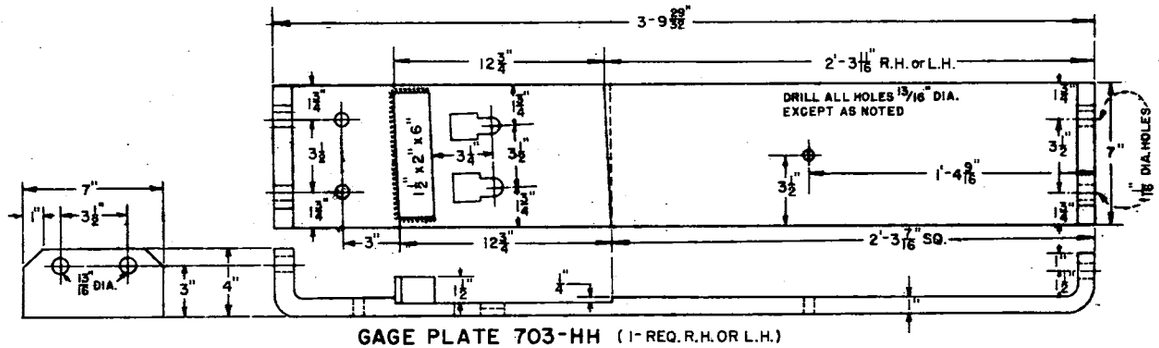
Dwg. Nº C-1703.3
SHEET 5



GAGE PLATE 703-GG (1-REQ. R.H. OR L.H.)

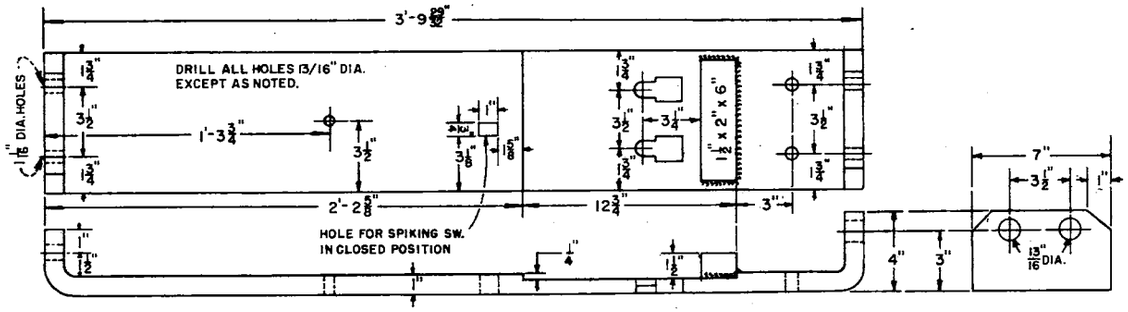


GAGE PLATE 703-D (2-REQ.)



GAGE PLATE 703-HH (1-REQ. R.H. OR L.H.)

NOTE
ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.



GAGE PLATE 703-EE (2-REQ.)

BURLINGTON NORTHERN INC.
STANDARD PLAN

16'-6" STRAIGHT ELECTRIC SWITCH 132 LB. R.E. RAIL (UNDERCUT) (GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. SEPT. 1971

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Revised 10-72, 6-73, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1703.2

Dwg. Nº C-1703.3
SHEET 6

No. 9 Turnout C-2061

16'-6" - 132# R.E C-1703 Electric

16'6"
132#
Electric

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete	W/O Stock Rails	01-407-03920	W/O Stock Rails	01-407-03947
LH 39' Stock Rail	Bent	08-043-01300	Straight	08-043-01327
RH 39' Stock Rail	Straight	08-043-01386	Bent	08-043-01343
LH 16'-6" Switch Point	Straight W/O Mang. Tip	01-407-03605	Straight W/Mang. Tip	01-407-03584
RH 16'-6" Switch Point	Straight W/Mang. Tip	01-407-03680	Straight W/O Mang. Tip	01-407-03701
LH Two Tie Heel Plate	LH Plate	01-407-03509	LH Plate	01-407-03517
RH Two Tie " "	RH Plate	01-407-03525	RH Plate	01-407-03533

Material

Description	Stock Code No.
Bar, Joint Bend RH	01-407-03015
LH	01-407-03007
Bar, Insulated Complete	
3M	01-403-50002
Portec	01-403-50109
Block Heel	01-407-03023
Brace Rail Complete	01-129-09200
Clip, SMJ Complete	01-407-01220
Rods, Insulated	
Complete W/Clips No. 1	01-407-07956
No. 2	01-407-07999
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" X 6"	01-319-79706
Thimble 2-3/8"	01-407-11939
2-3/16	01-407-09820
Tip, Manganese	
RH Tip	01-407-0398X
LH Tip	01-407-03971

Plates

Plate, Switch	Stock Code No.
J Plate	01-407-03373
K "	01-407-03381
L "	01-407-0339X
M "	01-407-03402
N "	01-407-03410
P "	01-407-03437
R "	01-407-03461
S "	01-407-0347X
T "	01-407-03488

Plates

Description	Stock Code No.
Plate, Extension Offset	02-148-31109
Straight	02-148-31141
Plate, Gage	
703 D Square	01-407-0304X
703 EE "	01-407-03074
703 GG Milled LH	01-407-03090
703 GG " RH	01-407-03103
703 HH " LH	01-407-0312X
703 HH " RH	01-407-03138
Plate, Slide	
B Plate	01-407-0320X
C "	01-407-03306
D "	01-407-03314
G "	01-407-03357

Plates	LH Layout	RH Layout
Plate, Gage Bolted	Stock Code No.	Stock Code No.
703D Sq. & 703 D Sq.	01-407-03031	01-407-03031
703EE & 703GG	01-407-03058	01-407-03066
703EE & 703HH	01-407-03146	01-407-03154

Frogs - Guard Rail

Rail, Guard 13'	Stock Code No.
Complete W/Plates	01-420-00823

Frog No 9 RBM	Stock Code No.
W/Loose End Plates	01-411-01825
W/O LooseEnd Plates	01-411-01868

Dwg. Nº C-1703.0
SHEET 7

(G 87)

No. 9 C-2061 and No. 7 C-2060 Turnouts

16'6" - 132# RE C-1703 Insulated

16'6" 132# Manual Insulated

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
No. 9 Switch Complete	W/O Stock Rails	01-407-03939	W/O Stock Rails	01-407-03955
LH 39' Stock Rail	Bent	08-043-01300	Straight	08-043-01327
RH 39" Stock Rail	Straight	08-043-01386	Bent	08-043-01343
LH 16'6" Switch Point	Straight W/O Mang. Tip	01-407-03605	Straight W/O Mang. Tip	01-407-03605
RH 16'6" Switch Point	Straight W/O Mang.Tip	01-407-03701	Straight W/O Mang. Tip	01-407-03701
LH Two Tie Heel Plate	LH Plate	01-407-03509	LH Plate	01-407-03517
RH Two Tie Heel Plate	RH Plate	01-407-03525	RH Plate	01-407-03533

MATERIAL: No. 9 and No. 7 T.O.

Description	Stock Code No.
Bar Joint Bent RH	01-407-03015
LH	01-407-03007
Bar, Insulated Complete	
3M	01-403-50002
Portec	01-403-50109
Block, Heel	01-407-03023
Brace Rail complete	01-129-09200
Clip, SMJ Complete	01-407-01220
Rods, Non-insulated	
Complete w/Clip No. 1	01-407-03787
No. 2	01-407-03795
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2-3/8"	01-407-11939
2-3/16"	01-407-09820

Plates: No. 9 or No. 7 T.O. Stock Code No.

Plate, Switch	No. 9 T. O.	No. 7 T. O.
J Plate	01-407-03373	01-407-0371X
K "	01-407-03381	01-407-03728
L "	01-407-0339X	01-407-03736
M "	01-407-03402	01-407-03744
N "	01-407-03410	01-407-03752
P "	01-407-03437	01-407-03760
R "	01-407-03461	01-407-03779
S "	01-407-0347X	
T "	01-407-03488	

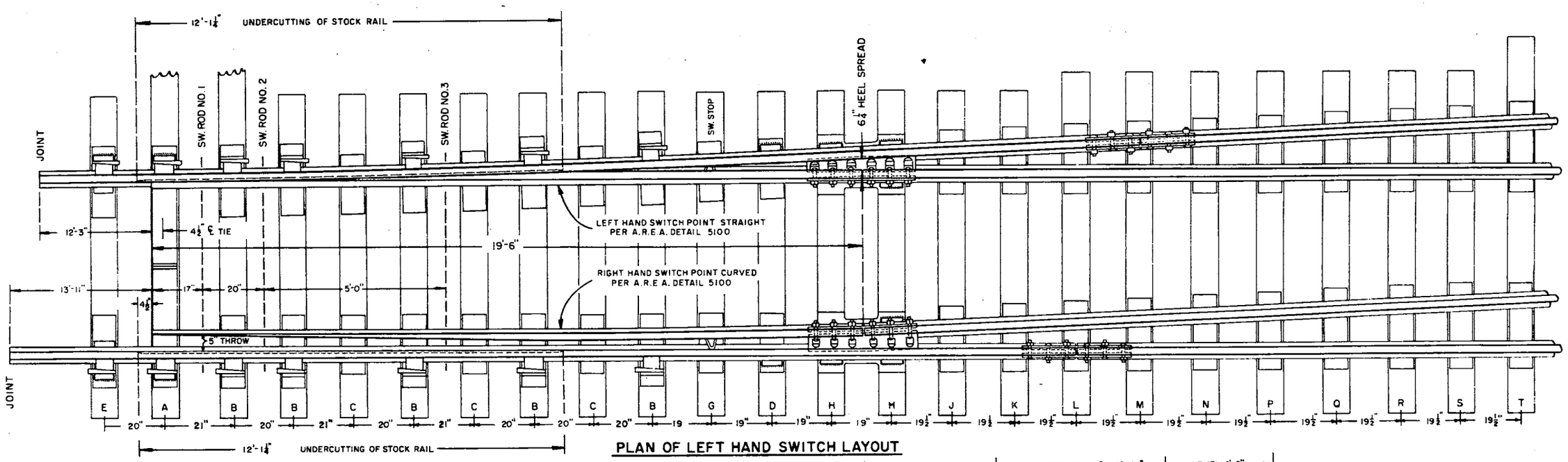
Plates: No. 9 and No. 7 T. O.

Description	Stock Code No
Plate, Gage	
Plate A Insulated	01-407-03250
" " Non-Insulated	01-407-03277
Plate, Slide	
B Plate	01-407-0320X
C "	01-407-03306
D "	01-407-03314
E "	01-407-03226

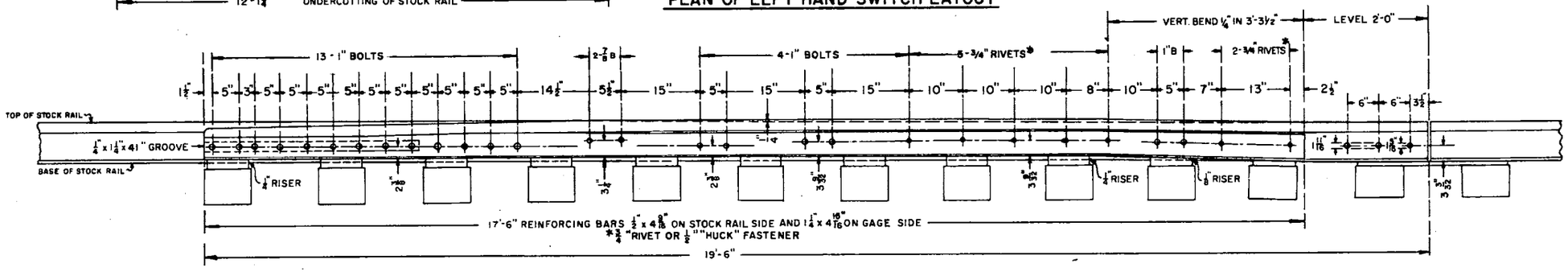
Frogs - Guard Rail		Frog No. 9 RBM	Stock Code No.	Frog No. 7 RBM	Stock Code No.
Rail, guard 13' Complete w/plates	Stock Code No. 01-420-00823	W/loose end plates	01-411-01825	W/Loose End Plates	01-411-08509
		W/O Loose End Plates	01-411-01868		

Dwg. Nº C-1703.0
SHEET 8

(G 87)



PLAN OF LEFT HAND SWITCH LAYOUT



ELEVATION OF SWITCH LAYOUT

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.
SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.
THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

ADJUSTABLE MANGANESE SWITCH POINT GUARD.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
132 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. FEB. 1971

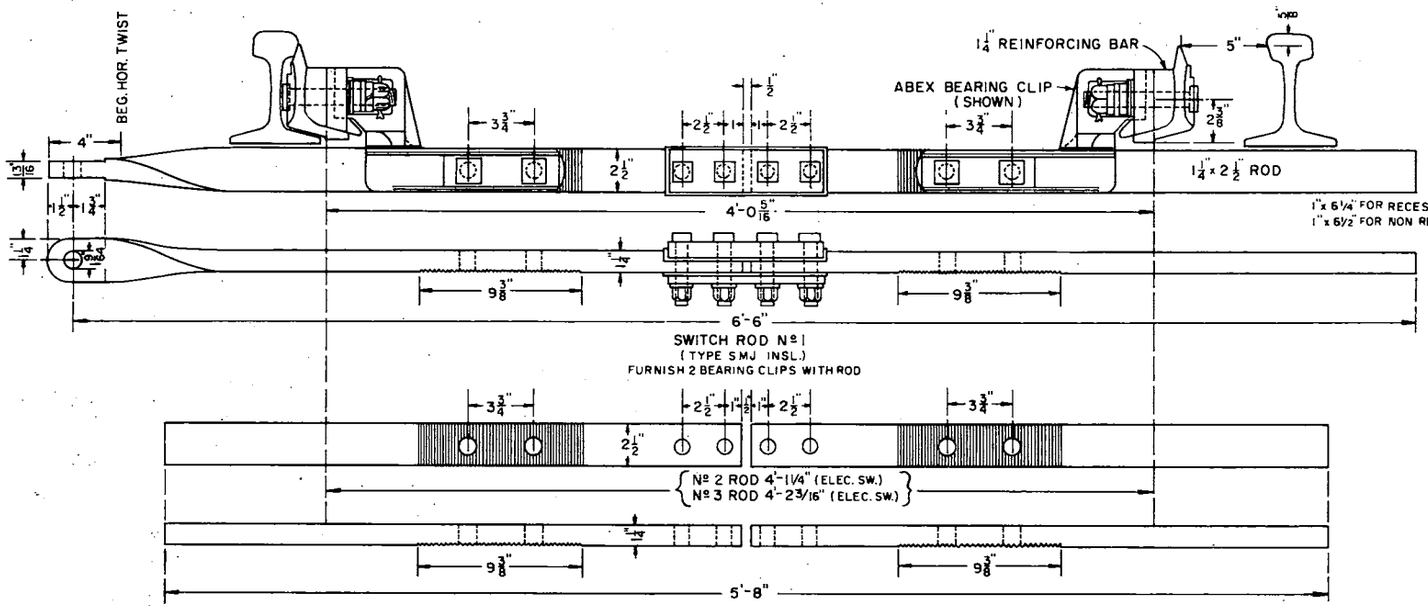
Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Revised 7-71, 3-72, 5-75, 7-78, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1704.4

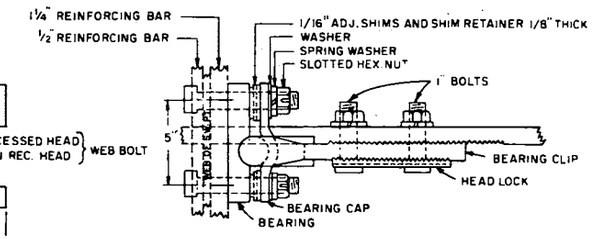
(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1704.5
SHEET 1

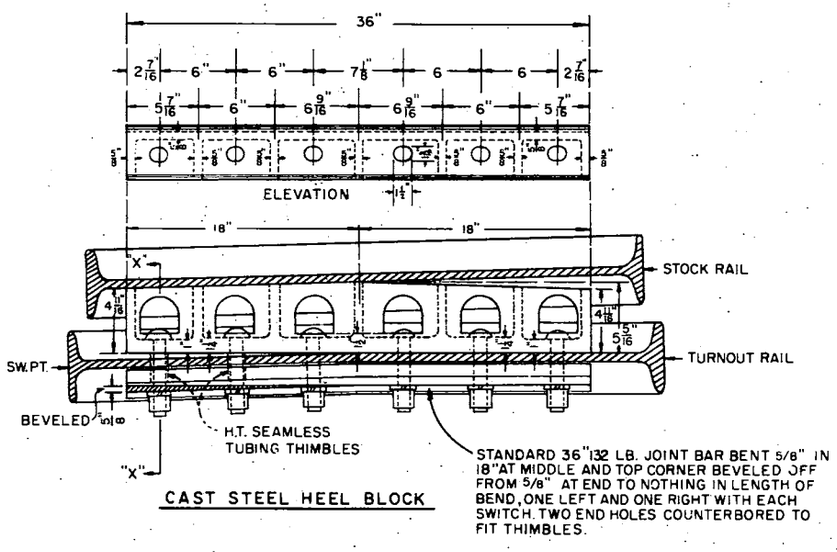


NOTE: *MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITION AS SHOWN ON PLANS.*

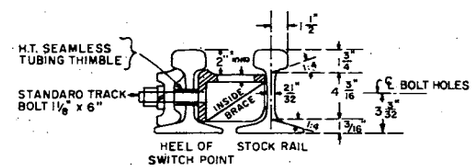
SWITCH RODS Nº 2 & 3
(TYPE SMJ INSL.)
FURNISH 2 BEARING CLIPS WITH EACH ROD



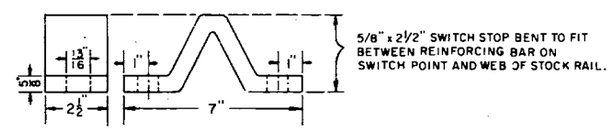
TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)



CAST STEEL HEEL BLOCK



SECTION THRU HEEL BLOCK AT "X-X"



SWITCH STOP

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
132 LB. R.E. RAIL
(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

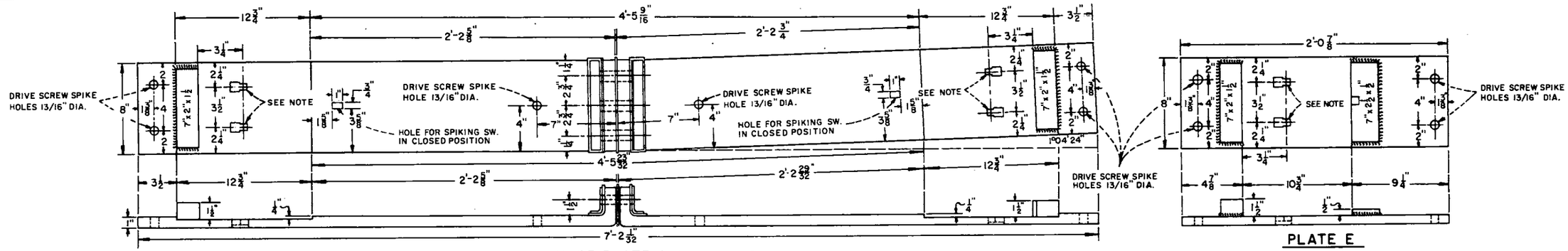
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. W. Lorentzen, Vice President Operations

Dwg Nº C-1704.3

THIS PLAN SUPERSEDES PLAN NO. C-1704.2

SHEET 2



GAGE PLATE A (INSULATED TYPE

PLATE E

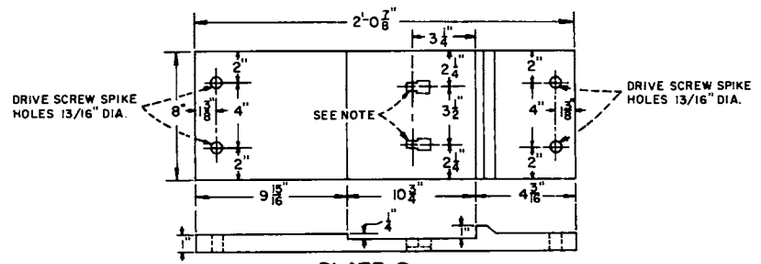
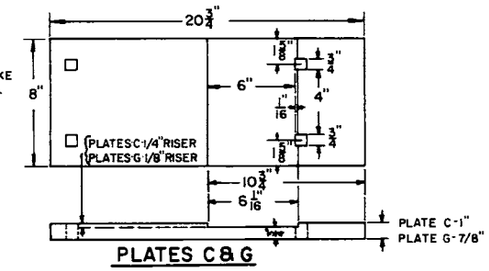
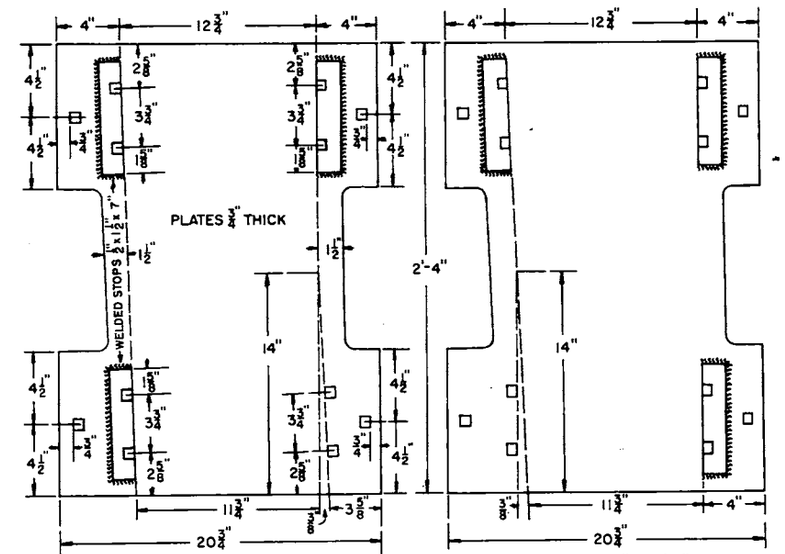


PLATE B



PLATES C & G



MARK "H-19'-6"-132 L.H.PL. L.H.T.O." MAKE OPPOSITE FOR "H-19'-6"-132 RH.PL. RH.T.O."

TWO TIE HEEL PLATE H

MARK "H-19'-6"-132 RH.PL. LH.T.O" MAKE OPPOSITE FOR "H-19'-6"-132 LH.PL. RH.T.O."

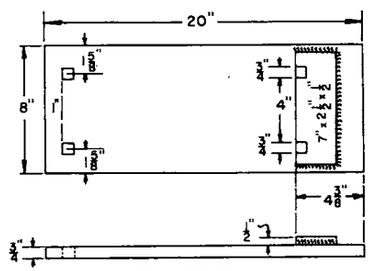
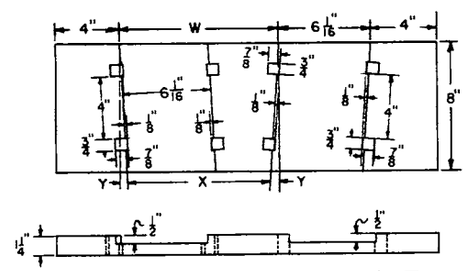


PLATE D

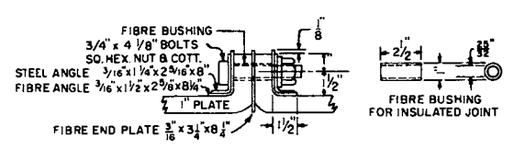


PLATES J, K, L, M, N, P, Q, R, S, T

ALL SPIKE HOLES IN PLATES J TO S INCL. 3/4"x 7/8"

NOTE:
PLATES TO BE PUNCHED WITH 3/4"x3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL (THUS 19'-6"A-132)
14 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH.
54 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARDWOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.

TABLE OF DIMENSIONS			
PLATES J THRU S			
PLATES	W	X	Y
J	7 7/16"	7 1/8"	5/32"
K	8 7/32"	7 29/32"	5/32"
L	9	8 23/32"	9/64"
M	9 27/32"	9 1/2"	11/64"
N	10 23/32"	10 3/8"	11/64"
P	11 9/16"	11 7/32"	11/64"
Q	12 7/16"	12 1/16"	3/16"
R	13 7/16"	13 1/16"	3/16"
S	14 3/8"	13 31/32"	13/64"
T	15 5/16"	14 7/8"	3/16"



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
132 LB. R.E. RAIL
(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. FEB., 1971

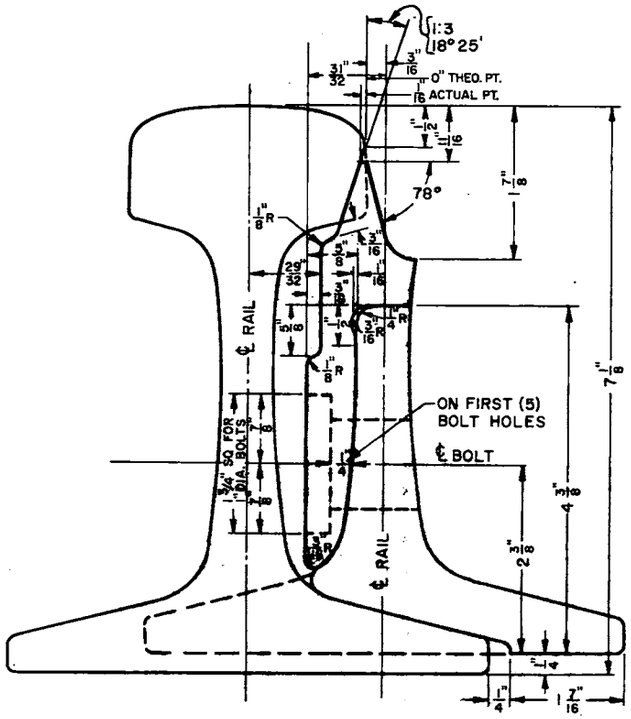
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: R. D. Bonnington, Vice President, Operations

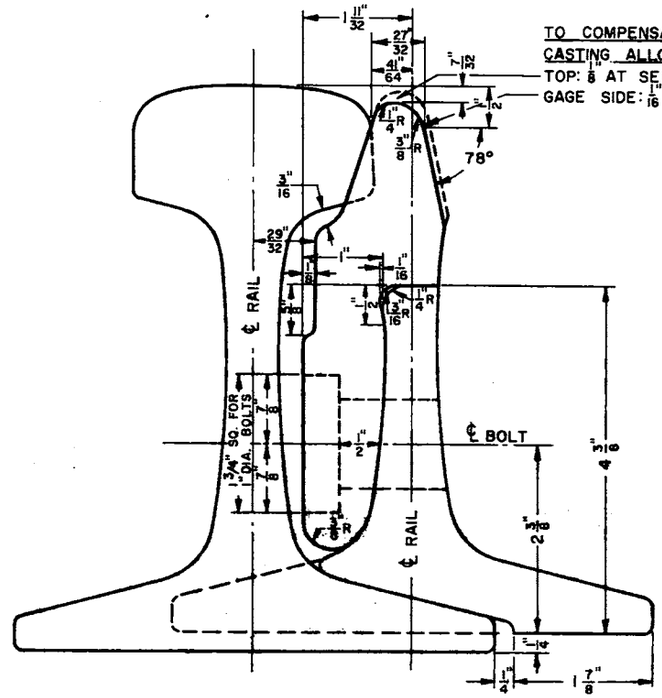
Dwg Nº C-1704.5

SHEET 3

Revised 3-71, 7-71, 6-73, 5-75, 7-78
THIS PLAN SUPERSEDES PLAN NO. C-1704.4

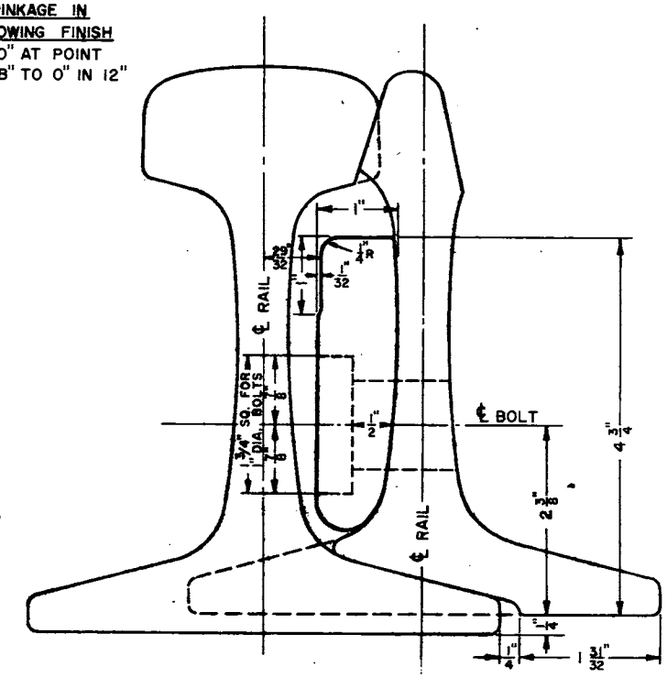


SECTION "A-A"

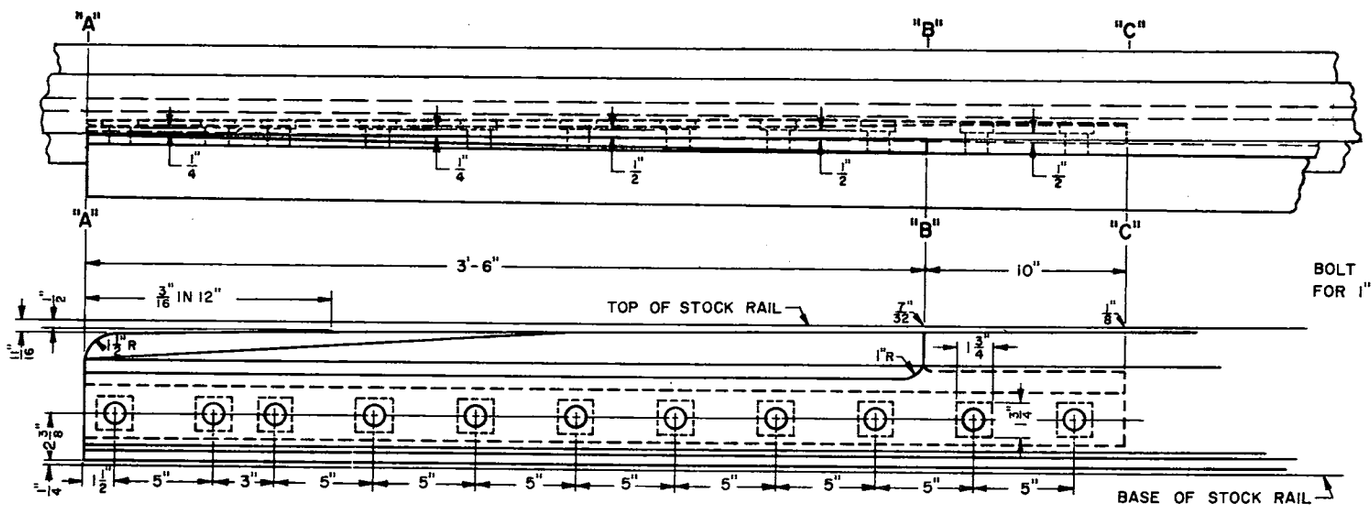


SECTION "B-B"

TO COMPENSATE FOR SHRINKAGE IN CASTING ALLOW THE FOLLOWING FINISH
TOP: 1/8" AT SECT. "B-B" TO 0" AT POINT
GAGE SIDE: 1/16" AT SECT. "B-B" TO 0" IN 12"



SECTION "C-C"



L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

BOLT HOLES CORED 1⅛" DIA. FOR 1" DIA. BOLTS.

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

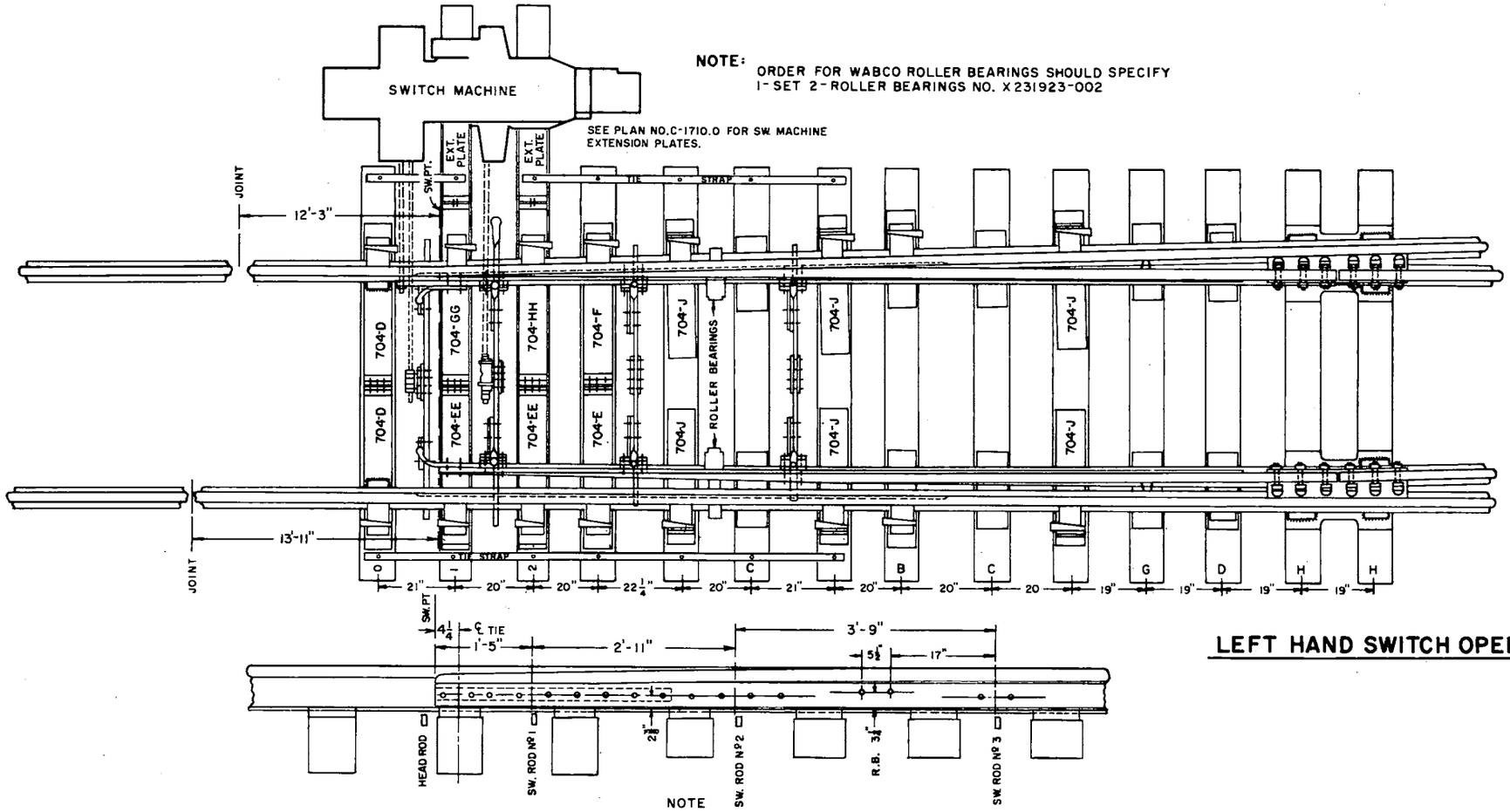
MANGANESE TIPS FOR 132 LB. 19'-6" SWITCH POINTS

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended
Asst. Vice President Engineering

Approved
Vice President, Operations

Dwg. № C-1704.0
SHEET 4



NOTE: ORDER FOR WABCO ROLLER BEARINGS SHOULD SPECIFY 1-SET 2-ROLLER BEARINGS NO. X231923-002

SEE PLAN NO. C-1710.0 FOR SW. MACHINE EXTENSION PLATES.

LEFT HAND SWITCH OPERATION SHOWN

NOTE

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 704 SERIES ARE TO BE MARKED THUS 704-GG L.H., 704-HH. L.H., ETC. MARK OPPOSITE FOR R.H.

MANGANESE TIPS REQUIRED ON BOTH SWITCH POINTS.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED

SURFACE HARDEN STOCK RAILS.

FURNISH 16-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 62-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 14-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

NOTE: BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

ELECTRIC SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN. FOR PLATES B, C, D, G AND H SEE PLAN C-1704.2 SHEET 3

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH 132 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1971

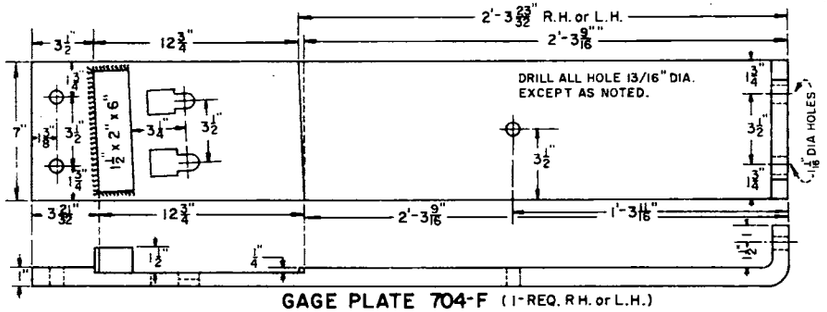
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: H. G. Thrington, Vice President, Operations

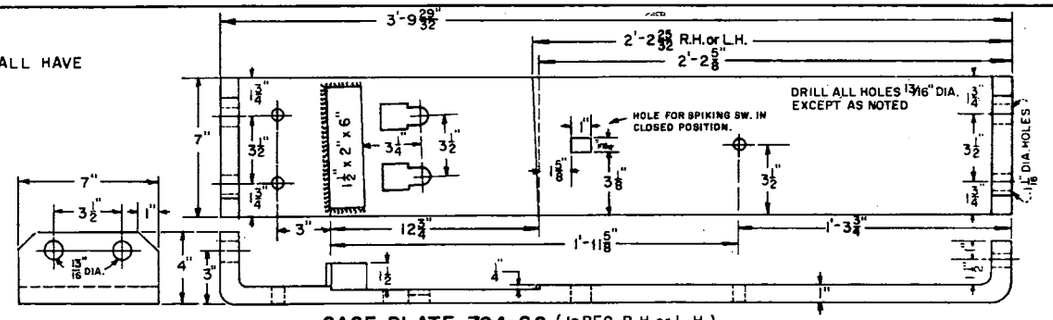
Revised 9-72, 6-73, 4-80, 12-80
THIS PLAN SUPERSEDES PLAN NO. C-1704.3

Dwg. Nº C-1704.4
SHEET 5

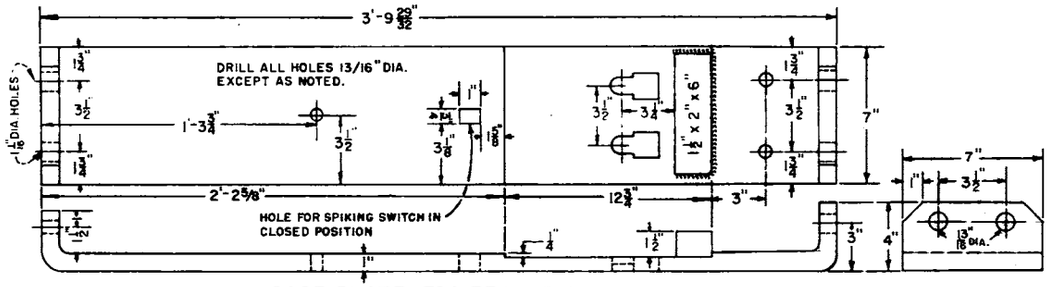
NOTE
ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.



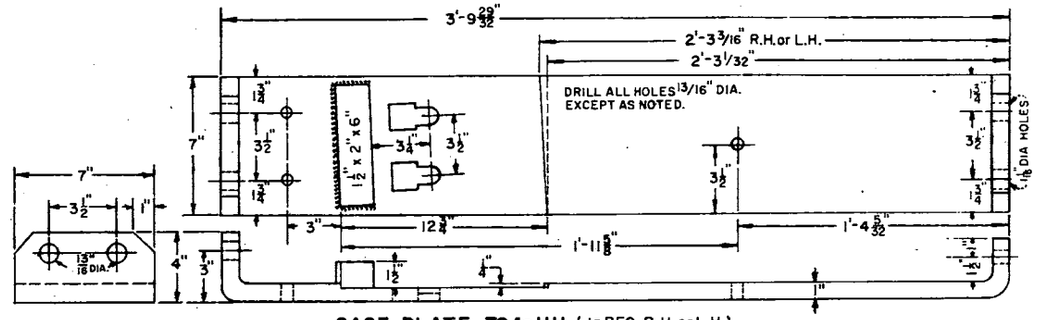
GAGE PLATE 704-F (1-REQ. R.H. or L.H.)



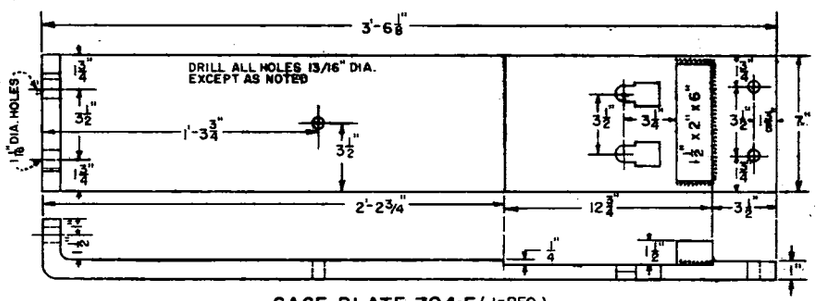
GAGE PLATE 704-GG (1-REQ. R.H or L.H.)



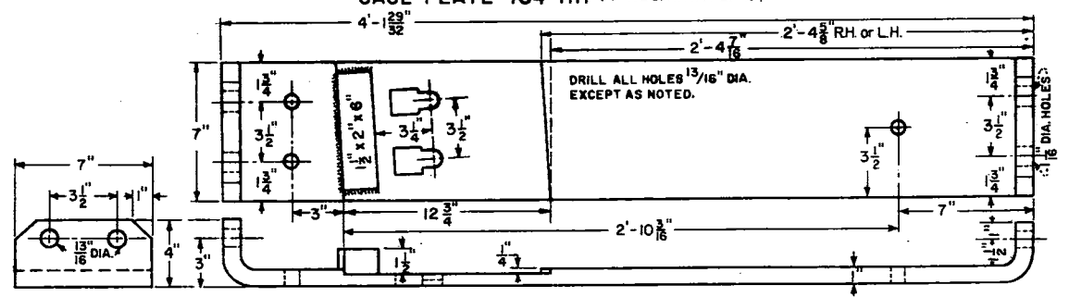
GAGE PLATE 704-EE (2-REQ.)



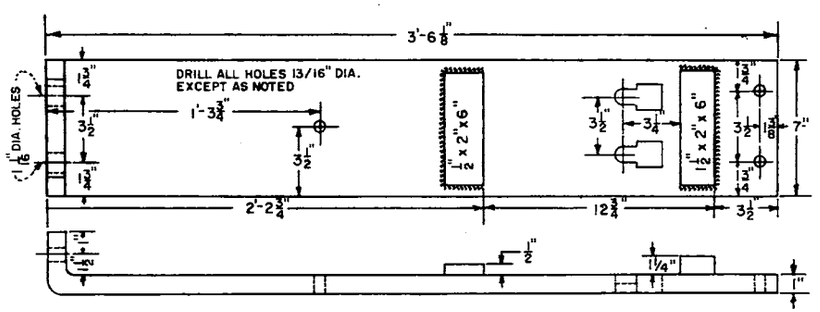
GAGE PLATE 704-HH (1-REQ. R.H. or L.H.)



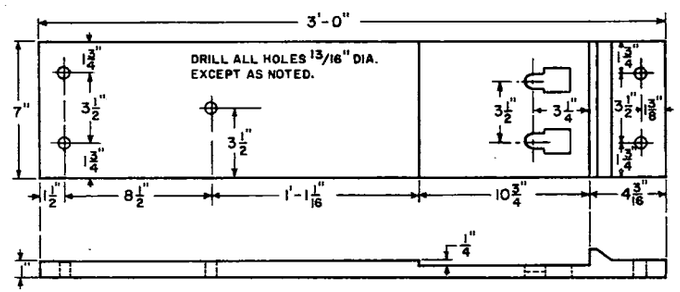
GAGE PLATE 704-E (1-REQ.)



GAGE PLATE 704-K (1-REQ. R.H. or L.H.)
(FOR USE WITH SPRING SWITCH ONLY)



GAGE PLATE 704-D (2-REQ.)



BRACE PLATE 704-J (6-REQ.)

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH
132 LB. R.E. RAIL
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1971

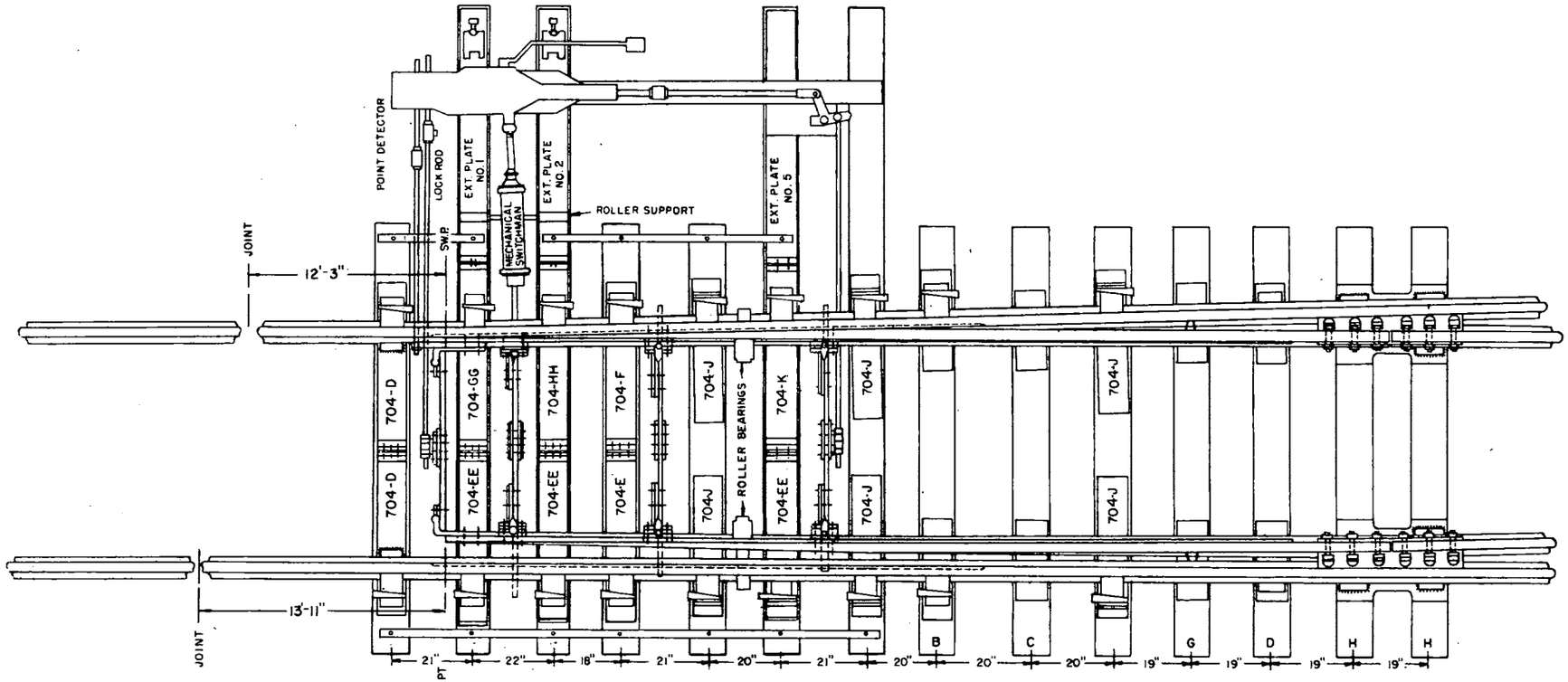
Recommended
Asst. Vice President Engineering

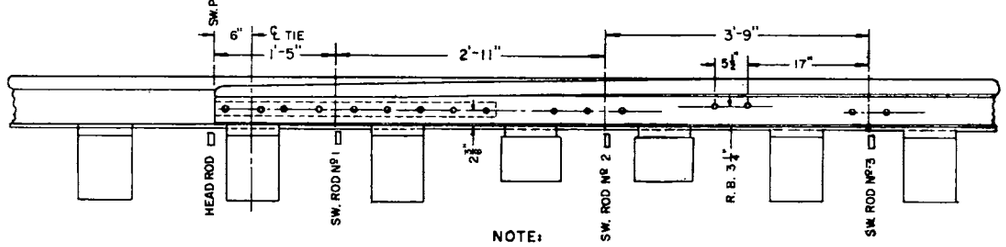
Approved
Vice President, Operations

Dwg. Nº C-1704.4

SHEET 6

Revised 9-72, 6-73, 9-74, 10-81
THIS PLAN SUPERSEDES PLAN Nº C-1704.3





LEFT HAND SWITCH OPERATION SHOWN

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 704 SERIES ARE TO BE MARKED THUS 704-GG L.H., 704-HH L.H., ETC. MARK OPPOSITE FOR R.H.
SEE PLAN C-1704.3 SHEET 6 FOR DETAILS OF GAGE PLATES.
MANGANESE TIPS REQUIRED ON BOTH SWITCH POINTS.
FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 SHEET 2.

SURFACE HARDEN STOCK RAILS.

FURNISH 18-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 91-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 13-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

NOTE:

BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

SPRING SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN.
FOR PLATES B, C, D, G AND H SEE PLAN C-1704.2 SHEET 3

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED SPRING SWITCH
132 LB. R.E. RAIL

WITH MECH. SWITCHMAN & FACING POINT LOCK

ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1974

Recommended: Asst. Vice President Engineering

Approved: Vice President Operations

Dwg. Nº C-1704.1

SHEET 7

Revised 12-80
THIS PLAN SUPERSEDES PLAN NO. C-1704.0

No. 11 Turnout C-2055

19'-6"-132# R. E. C-1704 - Electric

	L.H. Switch Layout		R.H. Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete	W/O Stock Rails	01-407-04843	W/O Stock Rails	01-407-04851
LH 39' Stock Rail	Curved	08-043-01503	Straight	08-043-01685
RH 39' Stock Rail	Straight	08-043-01626	Curved	08-043-01562
LH 19'6" Switch Point	Straight W/O Mang.Tip	01-407-04667	Curved W/Mang. Tip	01-407-04608
LH 19'6" Switch Point	Straight W/Mang. Tip	01-407-04675		
RH 19'6" Switch Point	Curved W. Mang. Tip	01-407-04720	Straight W/O Mang. Tip	01-407-0478X
RH 19'6" Switch Point			Straight W/Mang. Tip	01-407-04798
LH Two Tie heel plate	LH Plate	01-407-04528	LH Plate	01-407-04536
RH Two Tie heel plate	RH Plate	01-407-04544	RH Plate	01-407-04552

Plates	Stock Code No.
Plate, Switch	
J Plate	01-407-04341
K Plate	01-407-0435X
L Plate	01-407-04368
M Plate	01-407-04376
N Plate	01-407-04384
P Plate	01-407-04392
Q Plate	01-407-04405
R Plate	01-407-04413
S Plate	01-407-04421
T Plate	01-407-0443X

Plates	LH Layout	RH Layout
Plate, Gage Bolted	Stock Code No.	Stock Code No.
704D Sq. & 704 D Sq.	01-407-04018	01-407-04018
704E Sq. & 704F	01-407-04093	01-407-04114
704 EE Sq. 704 GG	01-4-7-04026	01-407-04034
704 EE Sq. 704 HH	01-407-04050	01-407-04069

Plates	
Description	Stock Code No.
Plate; Extension Offset	02-148-31109
Straight	02-148-31141
Plate, Gage	
704D Square	01-407-04042
704E Milled Square	01-407-04085
704EE " "	
704 F " RH	01-407-04130
704 F " LH	01-407-04122
704GG " RH	01-407-04165
704GG " LH	01-407-04157
704HH " RH	01-407-0419X
704HH " LH	01-407-04181
704 J " Square	01-407-0400X
Plate Slide	
B Plate	01-407-04245
C Plate	01-407-04309
D Plate	01-407-04317
G Plate	01-407-04333

Frogs - Guard Rails	Stock Code No.	Frog No. 11 RBM	Stock Code No.
Rail, Guard 13' Complete w/plates	01-420-00823	W/Loose End Plates	01-411-02502
		W/O Loose End Plates	01-4kk-02553

Material	
Description	Stock Code No.
Bar, joint bent RH	01-407-04[illegible]
LH	01-407-04[illegible]
Bar, Insulated Complete	
Bar, Insulated Complete 3M	01-403-[illegible]
Portec	01-403-[illegible]
Bearing, Roller Complete	01-407-01239
Block, Heel	01-407-05[illegible]
Brace, Rail Complete	01-129-09[illegible]
Clip SMJ Complete	01-407-01[illegible]
Rods, Insulated Complete W/Clips: No. 1	01-407-01310
No. 2	01-407-01327
No. 3	01-407-01335
Spike Timber Drive 3/4" x 6"	01-319-87001
Spike Timber Screw 3/4" x 6"	01-319-797[illegible]
Thimble 2-11/16	01-407-04[illegible]
Tip, Manganese RH Tip	01-407-04[illegible]
LH Tip	01-407-04[illegible]

Revised 12-80

Dwg No. C-17[illegible]
Sheet 8

(G 87)

No. 11 Turnout C-2055 | 19'-6" -132 R.E | C-1704 - Spring | 19'-6" 132# Spring

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No
Switch Complete	W/O Stock Rails	01-407-04907	W/O Stock Rails	01-407-04923
LH 39' Stock Rail	Curved	08-043-01503	Straight	08-043 01685
RH 39' Stock Rail	Straight	08-043-01626	Curved	08-043-01562
LH 19'6" Switch Point	Straight W/O Mang.Tip	01-407-04667	Curved W/Mang. Tip	01-407-04608
LH 19'6" Switch Point	Straight W/Mang. Tip	01-407-04675		
RH 19'6" Switch Point	Curved W/Mang. Tip	01-407-04720	Straight W/O Mang. Tip	01-407-0478X
RH 19'6" Switch Point			Straight W/Mang. Tip	01-407-04795
LH Two Tie Heel Plate	LH Plate	01-407-04528	LH Plate	01-407-04536
RH Two Tie Heel Plate	RH Plate	01-407-04544	RH Plate	01-407-04552

Plates	
Plate, Switch	Stock Code No.
J Plate	01-407-04341
K "	01-407-0435X
L "	01-407-04368
M "	01-407-04376
N "	01-407-04384
P "	01-407-04392
Q "	01-407-04405
R "	01-407-04413
S "	01-407-04421
T "	01-407-0443X

Plates	LH Layout	RH Layout
Plate, Gage Bolted	Stock Code No.	Stock Code No.
704 D & 704D Square	01-407-04018	01-407-04018
704 E & 704 F	01-407-04093	01-407-04114
704 EE & 704 GG	01-407-04026	01-407-04034
704 EE & 704 HH	01-407-04050	01-407-04069
704 EE & 704 K	01-407-04149	01-407-04173

Plates	
Description	Stock Code No
Plate, Extension No. 1 or No. 2	02-148-31213
No. 5	02-148-31256
Plate, Gage	
704D Square	01-407-04042
704E Milled Sq.	01-407-04085
704EE " "	01-407-04106
704F " RH	01-407-04130
704F " LH	01-407-04122
704GG " RH	01-407-04165
704GG " LH	01-407-04157
704HH " RH	01-407-0419X
704HH " LH	01-407-04181
704K " RH	01-407 04229
704K " LH	01-407-04210
704J " Sq.	01-407-0400X
Plate Slide	
B Plate	01-407-04245
C "	01-407-04309
D "	01-407-04317
G "	01-407-04333

Material	
Description	Stock Code No
Bar, Joint Bent RH	01-407 04499
LH	01-407-04490
Bar, Insulated Complete	
3M	01-403-50002
Portec	01-403-50109
Bearing, Roller Complete	01-407-01239
Block, Heel	01-407-04501
Brace, Rail Complete	01-129-09200
Clip, SMJ Complete	01-407-01220
Rods, Insulated Complete	
W/Clips: No. 1	01-407-01319
No. 2	01-407-01327
No. 3	01-407-01335
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2-11/16"	01-407-0494X
Tip, Manganese	
RH Tip	01-407-04456
LH Tip	01-407-04448

Frogs - Guard Rails		Frog No. 11 RBM	Stock Code No
Rail, Guard 13' Complete w/ plates	Stock Code No. 01-420-00823	W/Loose End Plates	01-411-02502
		W/O Loose End Plates	01-411-02553

Revised 12-80

Dwg.№ C-1704.1 SHEET 9

(G 87)

No. 11 Turnout C-2055

19'6" - 132# R.E. C-1704 - Insulated

19'-6"
132#
Dwg. No. 1

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch, Complete	W/O Stock Rails	01-407-0486X	W/O Stock Rails	01-407-04878
LH 39' Stock Rail	Curved	08-043-01503	Straight	08-043-01685
RH 39' Stock Rail	Straight	08-043-01626	Curved	08-043-01562
LH 19'6" Switch Point	Straight W/O Mang. Tip	01-407-04667	Curved W/Mang. Tip	01-407-04608
LH 19'6" Switch Point	Straight W/Mang. Tip	01-407-04675	Curved w/o Mang. Tip	01-407-04587
RH 19'6" Switch Point	Curved W/Mang. Tip	01-407-04720	Straight W/O Mang. Tip	01-407-0478X
RH 19'6" Switch Point	Curved W/O Mang. Tip	01-407-04683	Straight W/Mang. Tip	01-407-04798
LH Two Tie Heel Plate	LH Plate	01-407-04528	LH Plate	01-407-04536
RH Two Tie Heel Plate	RH Plate	01-407-04544	RH Plate	01-407-04552

Material

Description	Stock Code No
Bar, Joint Bent RH	01-407-04499
LH	01-407-04480
Bar Insulated Complete	
3M	01-403-50002
Portec	01-403-50103
Block, Heel	01-407-04501
Brace, Rail Complete	01-129-09200
Clip, SMJ Complete	01-407-01220
Rods, Insulated Complete	
W/Clips: No. 1	01-407-01319
No. 2	01-407-01327
No. 3	01-407-01335
Spike Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2-11/16"	01-407-0494X
Tip, Manganese	
RH Tip	01-407-04456
LH Tip	01-407-04448

Plates

Plate Switch	Stock Code No.
J Plate	01-407-04341
K Plate	01-407-0435X
L "	01-407-04368
M "	01-407-04376
N "	01-407-04384
P "	01-407-04392
Q "	01-407-04405
R "	01-407-04413
S "	01-407-04421
T "	01-407-0443X

Plates

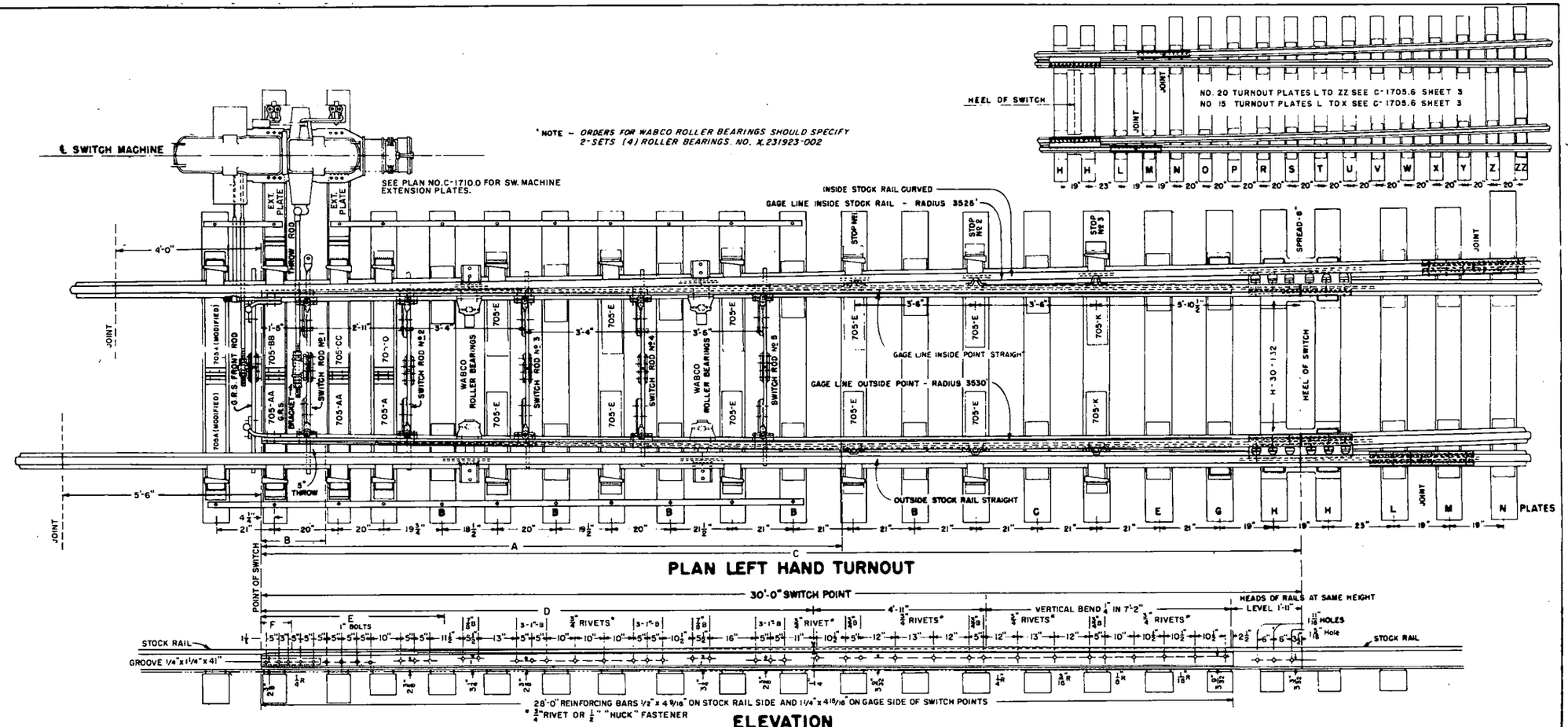
Description	Stock Code No.
Plate, Gage	
Plate A Insulated	01-407-04288
" " Non-Insulated	01-407-04296
Plate, Slide	
B Plate	01-407-04245
C "	01-407-4309
D "	01-407-04317
E "	01-407-04261
G "	01-407-04333

Frogs - Guard Rails			Stock Code No.
Rail Guard 13' Complete W/Plates	Stock Code No. 01-420-00823	Frog No. 11 RBM W/Loose End Plates	01-411-02502
		W/O Loose End Plates	01-411-02553

Revised 12-80

Dwg. Nº C-1704.1
SHEET 10

(G 87)



ALL BENDING TO BE DONE PRIOR TO PLANING.
SIDE OF HEAD PLANING 1ST. CUT (A) PLANE TO 1/8" THICKNESS AT POINT 1/2" BELOW TOP OF STOCK RAIL HEAD. SIDE CHAMFER (B) PLANE TO 1/16" THICKNESS AT POINT 11/16" BELOW TOP OF STOCK RAIL HEAD. ANGLE OF PLANING ON STOCK RAIL SIDE TO CONFORM WITH ANGLE OF UNDERCUT STOCK RAIL HEAD. AND ON GAGE LINE LINE SIDE 1ST. CUT SHALL HAVE AN ANGLE OF NOT LESS THAN 3°35' WITH VERTICAL AND CHAMFER CUT AN ANGLE OF 12°00' WITH VERTICAL HEAD OR TOP PLANING 1ST. CUT (D) TO START 16 FT. FROM POINT AND PLANE TO 3/8" BELOW TOP OF STOCK RAIL HEAD AT POINT. 2ND. CUT (E) TO START 5'-4" FOR POINT AND PLANE TO 1/2" BELOW TOP OF STOCK RAIL HEAD AT POINT. 3RD CUT (F) TO START 1'-0" FROM POINT AND PLANE TO 11/16" BELOW TOP OF STOCK RAIL HEAD AT POINT. SWITCH POINT TO ROUNDED TO A SHARP EDGE WITH A RADIUS OF 1/2" BASE PLANING (C) TO CLEAR BASE OF STOCK RAIL 1/32" AND WEB OF STOCK RAIL 1/8" SAME TO BE NOTCHED INTO BOTTOM SO AS TO GIVE BEARING ON PLATES WITHIN 1/4" OF STOCK RAIL BASE TWO STOCK RAILS TO BE UNDERCUT AS SHOWN IN SECTION AT POINT.

TABLE OF DIMENSIONS		
A	LENGTH OF PLANING ON SIDE OF HEAD (1ST CUT)	16'-9 7/8
B	LENGTH OF CHAMFER CUT	2'-0"
C	LENGTH OF BASE PLANING	30'-0"
D	LENGTH OF PLANING TOP OF HEAD (1ST CUT)	16'-0
E	LENGTH OF PLANING TOP OF HEAD (2ND CUT)	5'-4"
F	LENGTH OF PLANING TOP OF HEAD (3RD CUT)	1'-0

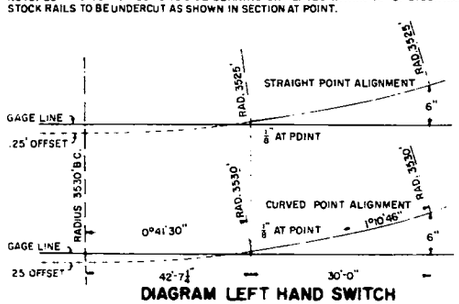
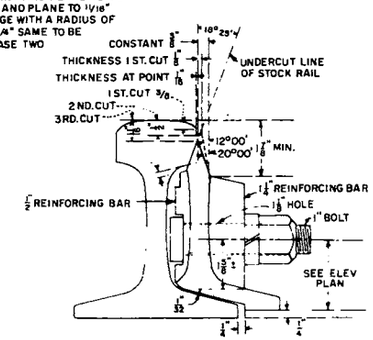


DIAGRAM LEFT HAND SWITCH

Revised 12-71, 4-72, 6-73, 5-75, 7-75, 8-78, 4-80, 12-80
THIS PLAN SUPERSEDES PLAN Nº C-1705.7



SECTION AT POINT

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 705 SERIES INCLUDING MODIFIED PLATES ARE TO BE MARKED THUS 705-BB L.H., 705-CC L.H. ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED.

SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

MANGANESE TIPS REQUIRED ON BOTH SWITCH POINTS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

30 FT. CURVED SWITCH
132 LB. R.E. RAIL
(FOR USE WITH NO.15 OR NO. 20 TURNOUT)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended — Asst Vice President Engineering
Approved — Vice President, Operations

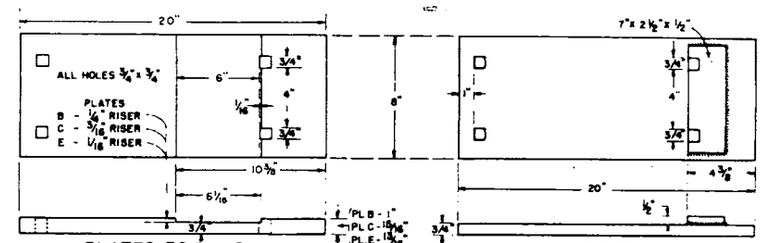
Dwg Nº C-1705.8

SHEET 1

NOTE:
FOR GAGE PLATES 705-AA, 705-BB AND 705-CC SEE PLAN Nº C-1705.0 Sheet 5.

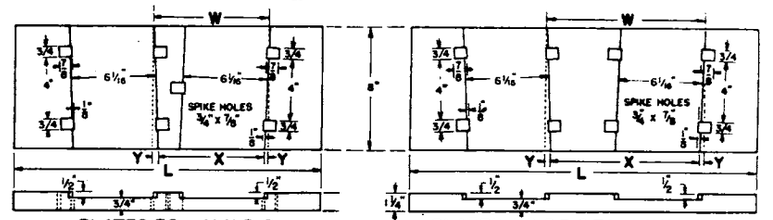
Nº 15 TURNOUT				
DIMENSIONS OF PLATES L TO X				
PLATE	W	X	Y	L
L	6 25/32"	6 19/32"	3/32"	20 1/2"
M	7 7/32"	7 1/32"	3/32"	20 1/2"
N	7 11/16"	7 15/32"	3/32"	21 1/2"
O	8 3/16"	7 31/32"	3/32"	21 1/2"
P	8 11/16"	8 15/32"	3/32"	22 1/2"
R	9 7/32"	9"	3/32"	22 1/2"
S	9 25/32"	9 9/16"	3/32"	23 1/2"
T	10 3/8"	10 1/8"	1/4"	23 1/2"
U	10 31/32"	10 23/32"	1/4"	24 1/2"
V	11 19/32"	11 11/32"	1/4"	24 1/2"
W	12 7/32"	11 31/32"	1/4"	25 1/2"
X	12 7/8"	12 5/8"	1/4"	25 1/2"

Nº 20 TURNOUT				
DIMENSIONS OF PLATES L TO ZZ				
PLATE	W	X	Y	L
L	6 25/32"	6 19/32"	3/32"	20"
M	7 3/16"	7"	3/32"	20"
N	7 19/32"	7 13/32"	3/32	20"
O	8 1/16"	7 7/8"	3/32"	22"
P	8 1/2"	8 5/16"	3/32"	22"
R	8 31/32"	8 29/32"	3/32"	22"
S	9 15/32"	9 9/32"	3/32"	22"
T	9 15/16"	9 3/4"	3/32"	24"
U	10 7/16"	10 1/4"	3/32"	24"
V	10 31/32"	10 3/4"	3/32"	24"
W	11 15/32"	11 9/32"	3/32"	25"
X	12"	11 29/32"	3/32"	25"
Y	12 17/32"	12 5/16"	1/4"	25"
Z	13 3/32"	12 7/8"	1/4"	26"
ZZ	13 21/32"	13 7/16"	1/4"	26"



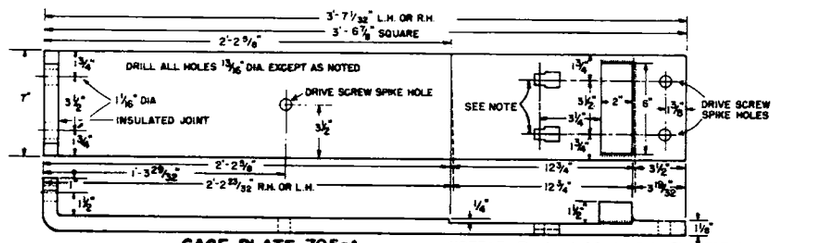
PLATES 30 B, C & E
PLATE B - 10 REQUIRED
PLATES C & E - 2 EACH REQUIRED

PLATES 30 G
2 REQUIRED



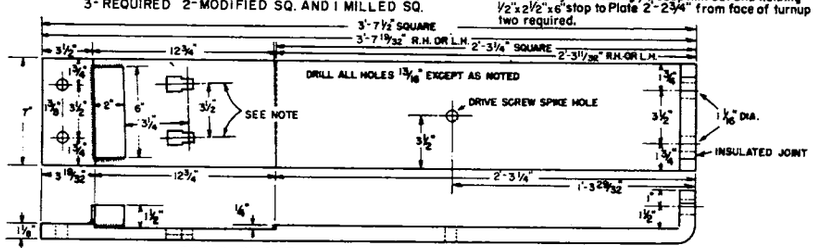
PLATES 30-L, M, N & O
2 EACH REQUIRED

PLATES 30-P, R, S, T, U, V, W, X, Y, Z & ZZ
2 EACH REQUIRED

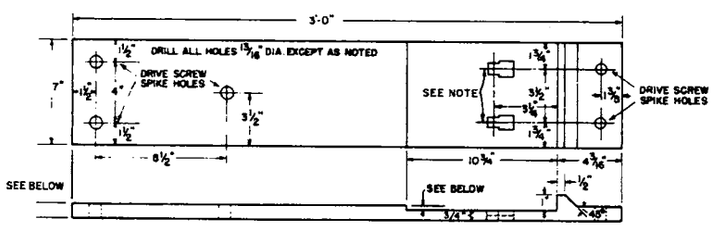


GAGE PLATE 705-A
3-REQUIRED 2-MODIFIED SQ. AND 1 MILLED SQ.

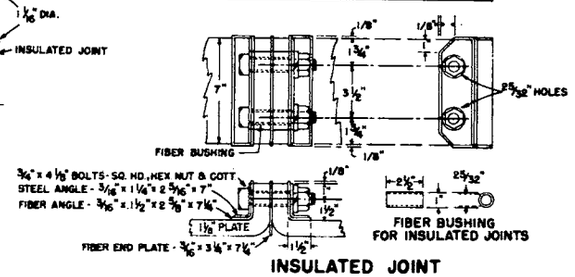
NOTE: For Tie ahead of Switch Point Plate 705-A to be modified by eliminating 1/4" deep mill cut and welding 1/2" x 2 1/2" x 6" stop to Plate 2'-2 3/4" from face of turnup two required.



GAGE PLATE 705-D
1 REQUIRED-R.H. OR L.H.



BRACE PLATE 705-E & 705-K
10 PIECES 1" x 7" MILL FOR 1/4" RISER-PLATE 705-E
2 PIECES 7/8" x 7" MILL FOR 1/8" RISER-PLATE 705-K



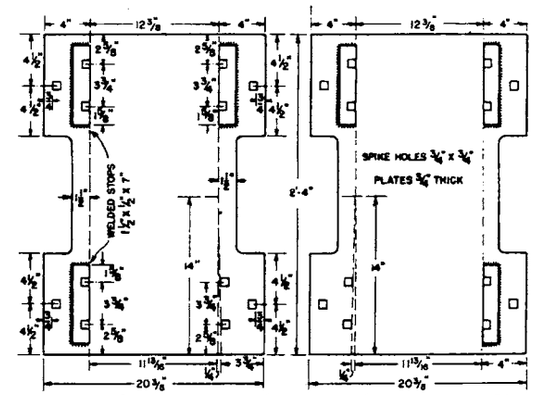
INSULATED JOINT
4 SETS OF PARTS REQUIRED

NOTE:
Slotted Holes to permit top insertion of H.T. Bolts for adjustable rail braces.

ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.

Furnish 22-3/4" x 6" Lag Screws for Tie Straps.
Furnish 84 Drive Screw Spikes 13/16" to 3/4" Dia. Taper Shank x 6" long.
Furnish 20 Security Adjustable Rail Braces, Racor Style 3134-C, with Wedges, Bolts, Nuts and Washers.

NOTE - Bore Ties in field for Drive Screw Spikes. 1/2" hole in soft wood ties and 9/16" holes in hardwood ties.



MARK "H-30-132 L.H. PL.-L.H.T.O." MAKE OPPOSITE FOR "H-30-132 R.H. PL.-R.H.T.O."

MARK "H-30-132 R.H. PL.-L.H.T.O. MAKE OPPOSITE FOR "H-30-132 L.H. PL.-R.H.T.O."

TWO TIE HEEL PLATE H

BURLINGTON NORTHERN INC.
STANDARD PLAN

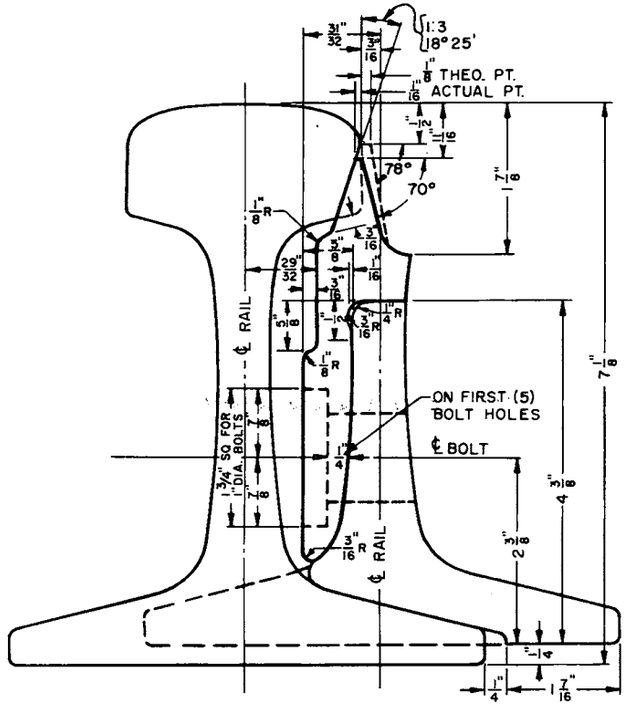
30 FT. CURVED SWITCH
132 LB. R.E. RAIL
(GAGE & TIE PLATES AND INSULATED JOINTS)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

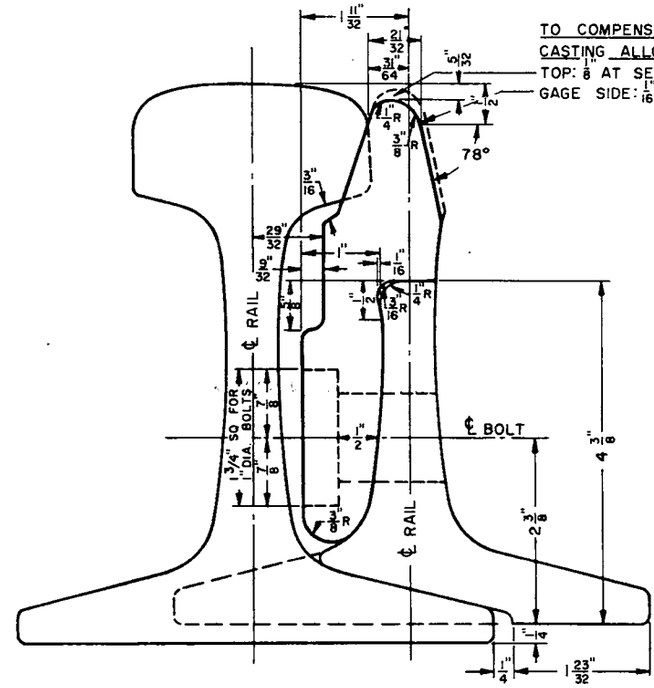
Recommended: R. H. Anderson — Asst. Vice President Engineering
Approved: W. W. Rowlands — Vice President, Operations

10-81
Revised 3-71, 12-71, 4-72, 7-75, 12-76, 8-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1705.7

Dwg. Nº C-1705.8
SHEET 3

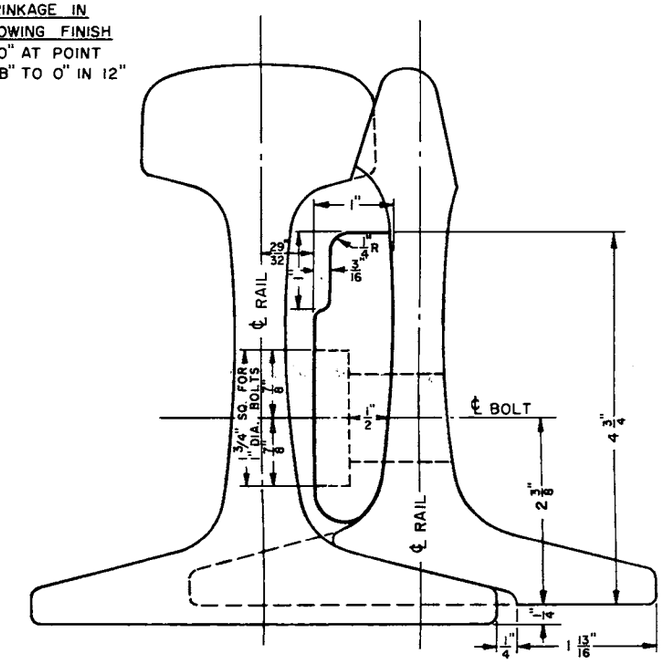


SECTION "A-A"

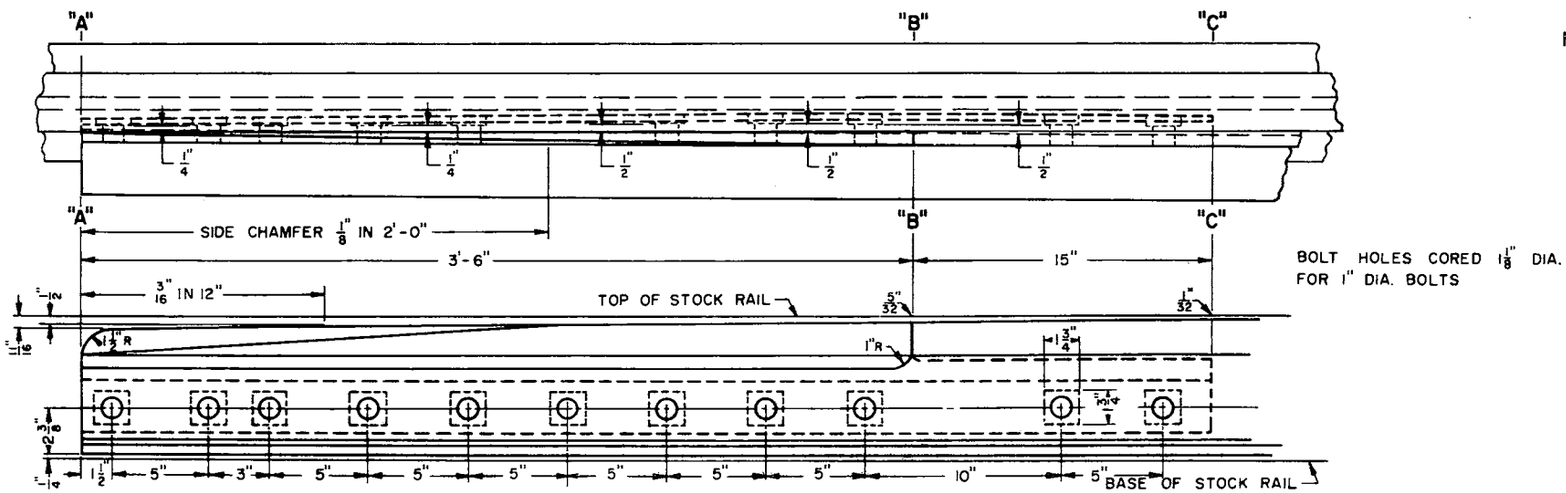


SECTION "B-B"

TO COMPENSATE FOR SHRINKAGE IN CASTING ALLOW THE FOLLOWING FINISH
TOP: 1/8" AT SECT. "B-B" TO 0" AT POINT
GAGE SIDE: 1/16" AT SECT. "B-B" TO 0" IN 12"



SECTION "C-C"



BOLT HOLES CORED 1 1/8" DIA. FOR 1" DIA. BOLTS

L. H. MANG. POINT SHOWN
R. H. MANG. POINT OPP. HAND

NOTE:
TIP TO CONFORM TO A.R.E.A. SPECIFICATIONS AND PLAN 220-52 EXCEPT AS NOTED.

BURLINGTON NORTHERN INC
STANDARD PLAN

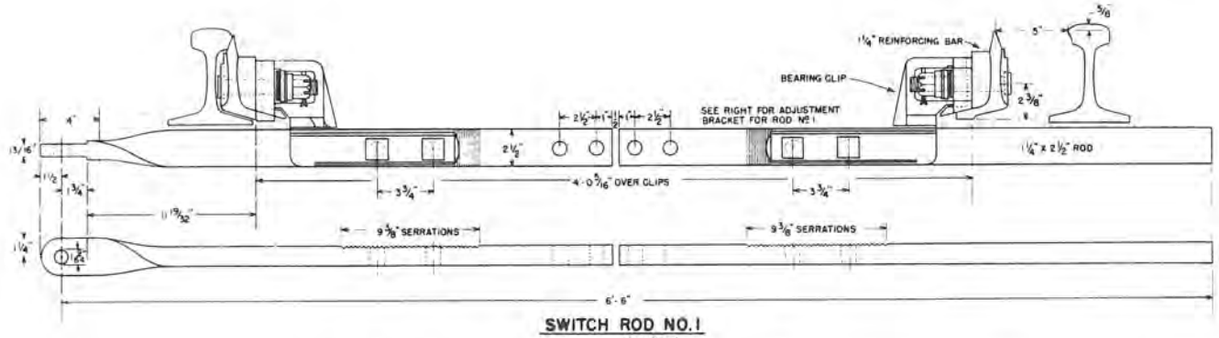
MANGANESE TIPS FOR 132 LB. 30'-0" SWITCH POINT

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

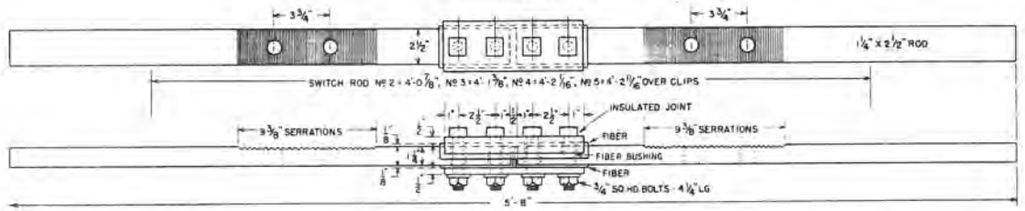
Approved: J. E. Thington, Vice President, Operations

Dwg № C-1705.0
SHEET 4



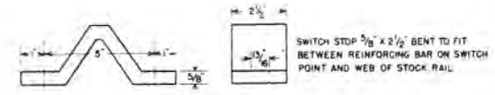
SWITCH ROD NO. 1

INSULATED 1



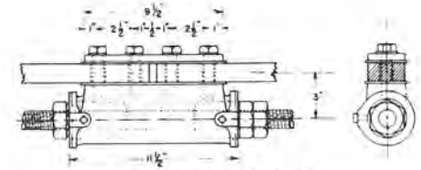
SWITCH RODS NOS. 2, 3, 4 & 5

INSULATED 1

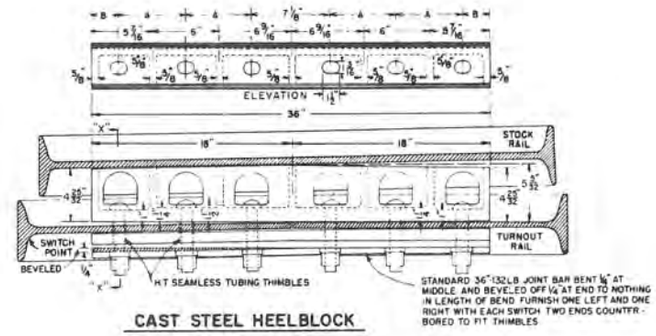


SWITCH STOP

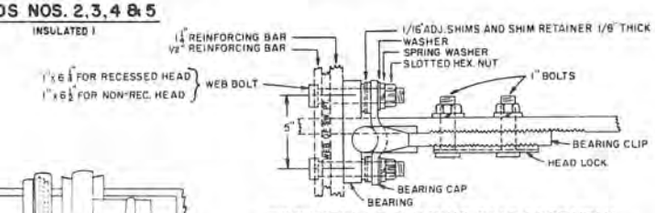
3 REQUIRED



SWITCH ADJUSTMENT BRACKET

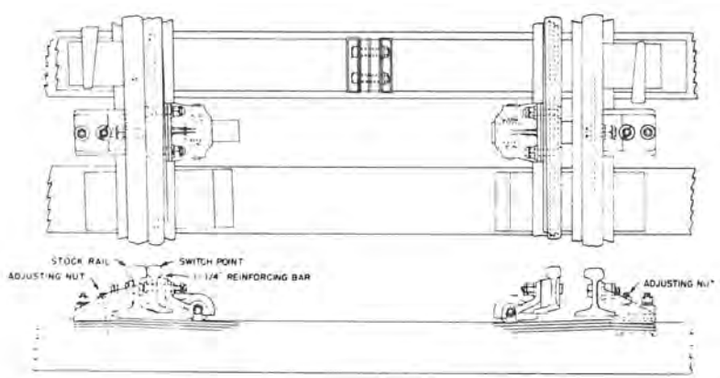


CAST STEEL HEELBLOCK



TOP VIEW OF BEARING CLIP ASSEMBLY

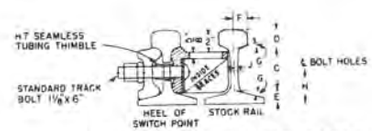
(FURNISH 2 BEARING CLIPS WITH EACH ROD)



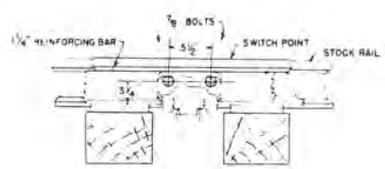
UNION SWITCH & SIGNAL CO. ROLLER BEARING

2 SETS 4 ROLLER BEARINGS REQUIRED

NO. X 231923-002



SECTION THROUGH HEEL BLOCK AT "X-X"



HEEL BLOCK DIMENSIONS	
A	6"
B	2-7/16"
C	4-3/16"
D	1-3/4"
E	1-3/16"
F	1-1/2"
G	1:4
H	3-3/32"
J	21/64"

BURLINGTON NORTHERN INC.

STANDARD PLAN

30 FT. CURVED SWITCH
132 LB. R.E. RAIL
(SWITCH RODS AND HEEL BLOCK)

ENGINEERING DIVISION, ST. PAUL, MINN. JAN. 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

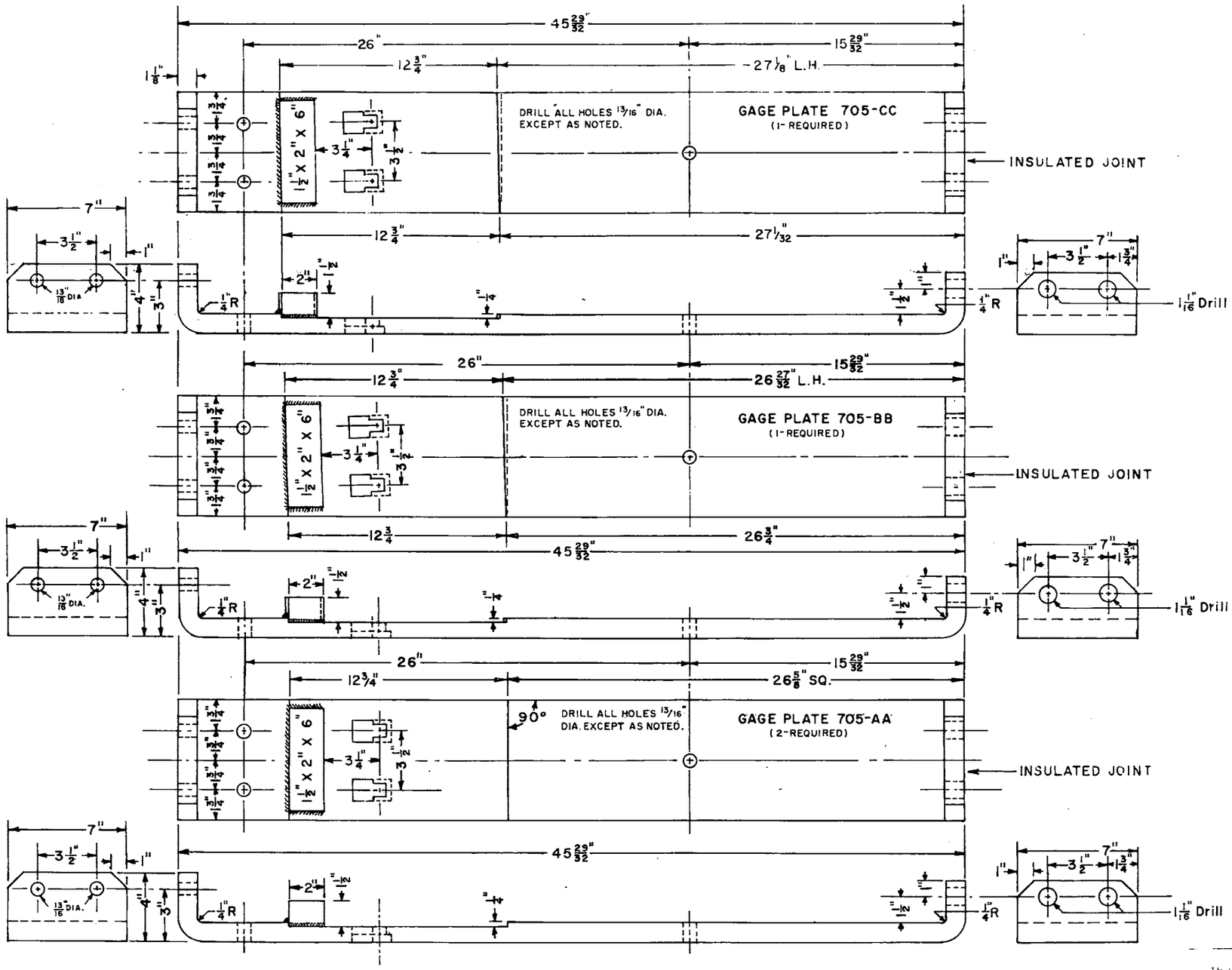
Approved: R. M. Houmtzen, Vice President, Operations

Dwg. Nº C-1705.4

SHEET 2

Revised 6-73, 5-75, 4-80, 12-80

THIS PLAN SUPERSEDES PLAN NO. C-1705.3



NOTE:

PLATES 705-BB AND 705-CC SHOWN ARE FOR LEFT HAND TURNOUT MAKE OPPOSITE FOR RIGHT HAND TURNOUT.

BURLINGTON NORTHERN INC.
STANDARD PLAN

30 FT. CURVED SWITCH
132 LB. R.E. RAIL
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1973

Recommended: Asst. Vice President Engineering

Approved: Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-1705.0

Dwg. Nº C-1705. Sheet 5

No. 20 (C-2051) and No. 15 (C-2071) Turnout Plans — 30'-132# RE Curved Switch (C-1705 - Electric) — 30' - 132# Electric

NOTE: No. 15 and No. 20 30'0" Switches are identical except for plates between heel of switch and toe of frog. *

	L.H. Switch Layout - No. 20 Only		R.H. Switch Layout - No. 20 Only	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete for No. 20TO	W/O Stock Rails	01-407-0590X	W/O Stock Rails	01-407-05926
LH 39' Stock Rail	Curved	08-043-01802	Straight	08-043-01984
RH 39' Stock Rail	Straight	08-043-01925	Curved	08-043-01861
LH 30' Switch Point	Straight w/o Mang.Tip	01-407-0566X	Curved w/Mang.Tip	01-407-05600
LH 30' Switch Point	Straight W/Mang. Tip	01-407-05686		
RH 30' Switch Point	Curved w/Mang. Tip	01-407-05723	Straight w/o Mang. Tip	01-407-05782
RH 30' Switch Point			Straight w/Mang. Tip	01-407-05803
LH Two Tie Heel Plate	LH Plate	01-407-05416	LH Plate	01-407-05424
RH Two Tie Heel Plate	RH Plate	01-407-05432	RH Plate	01-407-05440

Plates: No. 20 or No. 15 T.O.	Stock Code No.	
Plates, Switch	* No. 20 T.O.	* No. 15 T.O.
L Plate	01-407-05264	01-407-06005
M Plate	01-407-05272	01-407-06013
N Plate	01-407-05280	01-407-06021
O Plate	01-407-05299	01-407-0603X
P Plate	01-407-05301	01-407-06048
R Plate	01-407-0531X	01-407-06064
S Plate	01-407-05328	01-407-06072
T Plate	01-407-05336	01-407-06080
U Plate	01-407-05344	01-407-06099
V Plate	01-407-05352	01-407-06101
W Plate	01-407-05360	01-407-0611X
X Plate	01-407-05379	01-407-06128
Y Plate	01-407-05387	
Z Plate	01-407-05395	
ZZ Plate	01-407-05408	

Plates	LH Layout	RH Layout
Plate, Cage Bolted	Stock Code No.	Stock Code No.
705A & 705A	01-407-05045	01-407-05045
705AA & 705BB	01-407-05061	01-407-05088
705AA & 705CC	01-407-05133	01-407-05168
705A & 705D	01-407-05192	01-407-05205

Plates: No. 20 or No. 15	
Description	Stock Code No.
Plate, Extension Offset	02-148-31109
Straight	02-148-31141
Plate, Cage	
705A Modified Square	01-407-05053
705 Milled Square	01-407-0507X
705AA Milled Square	01-407-05096
705BB Milled, RH	01-407-05125
705BB Milled, LH	01-407-05117
705CC Milled, RH	01-407-0515X
705CC Milled, LH	01-407-05141
705D Milled, RH	01-407-05184
705D Milled, LH	01-407-05176
705E Square	01-407-05010
705K Square	01-407-05030
Plate, Slide	
B Plate	01-407-05213
C Plate	01-407-05221
E Plate	01-407-05248
G Plate	01-407-02389

MATERIAL: No. 20 and No. 15 T.O.	
Description	Stock Code No.
Bar, Joint Bent RH	01-407-05491
Bar, Joint Bent LH	01-407-05483
Bar, Insulated, 3M	01-403-50002
or Portec	01-403-50109
Bearing, Roller complete	01-407-01239
Block, Heel	01-407-05504
Brace, Rail complete	01-129-09200
Clip, SMJ complete	01-407-01220
Rods, Insulated complete	
w/Clips No. 1	01-407-05512
w/Clips No. 2	01-407-05520
w/Clips No. 3	01-407-05539
w/Clips No. 4	01-407-05547
w/Clips No. 5	01-407-05555
Spike, Tbr. Drive 3/4"x6"	01-319-87001
Spike, Tbr. Screw 3/4"x6"	01-319-79706
Strap, Tie set	02-148-66002
Thimble, 2-5/16"	01-407-01415
Thimble, 2-7/16"	01-407-0558X
Tip, Manganese	
RH Tip	01-407-05475
LH Tip	01-407-05467

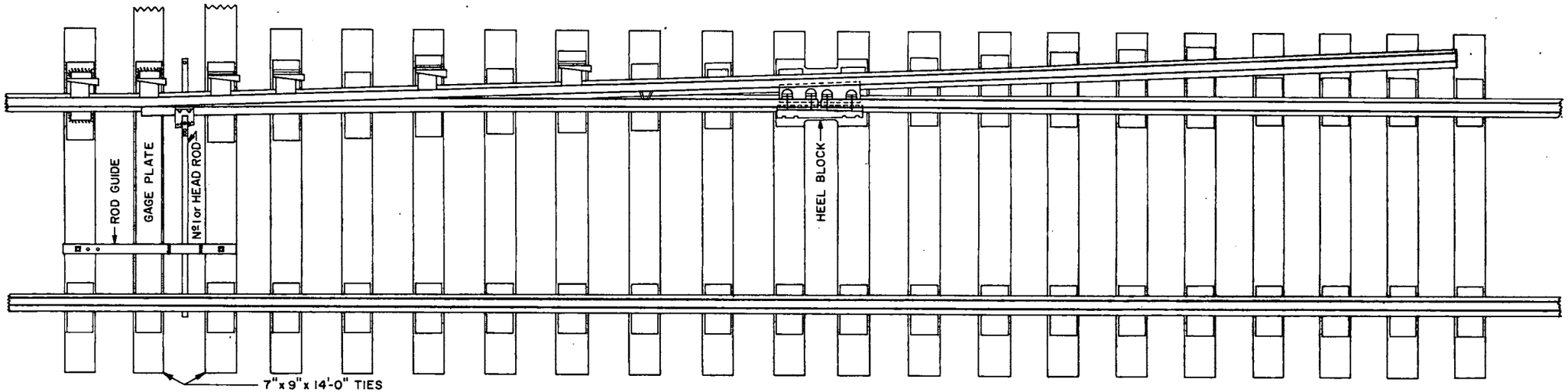
Guard Rails C-2004	
Rail, Guard, 15' w/Plates	Stock Code No. 01-420-01180

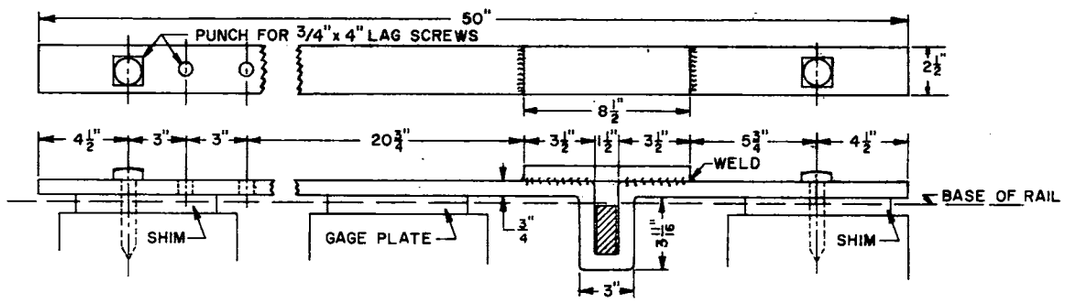
Frog No. 20 RBM C-1813	Stock Code No.	Frog No. 15 RBM C-1828	Stock Code No.
w/Loose End Plates	01-411-07004	w/Loose End Plates	01-411-17245
w/o Loose End Plates	01-411-07100	w/o Loose End Plates	01-411-17261

Revised 12-80

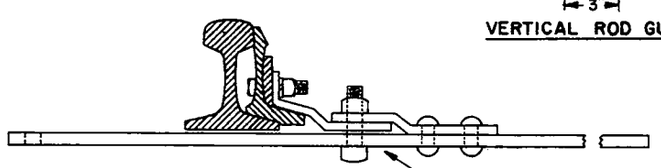
Dwg. Nº C-1705.1
SHEET 6

(G 87)

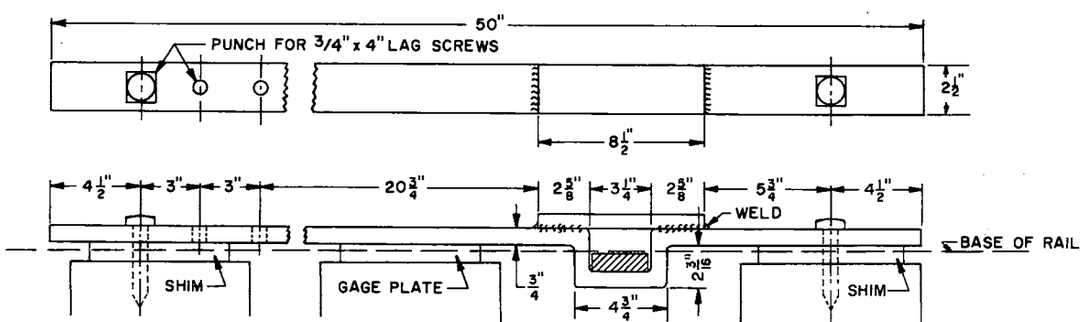




VERTICAL ROD GUIDE



SWITCH POINT, CLIP, ROD AND TIE SPACING TO BE FURNISHED MUST BE COMPATIBLE WITH THE RAIL AND SWITCHES IN THE TERRITORY WHERE THE DERAIL IS TO BE PLACED.



FLAT ROD GUIDE

THIS PLAN SUPERSEDES PLAN NO. C-1706.0

FURNISH FOR EACH DERAIL

- 1 - 16'-6" SWITCH POINT (STATE R.H. OR L.H.)
- 1 - Nº1 OR HEAD ROD COMPLETE WITH CLIP AND BOLTS
- 1 - HEEL JOINTS COMPLETE WITH BAR AND BOLTS
- 1 - SET OF SLIDE AND RUNOFF PLATES FOR ONE POINT
- 1 - SET OF BRACES FOR ABOVE PLATES
- 1 - ROD GUIDE PER THIS PLAN (STATE FOR FLAT OR VERTICAL ROD)
- 2 - 3/4"x 4" LAG SCREWS
- 2 - 7"x 9"x 14' SWITCH TIES

TERRITORY STANDARD PLAN	RAIL				
	90LB	100LB	110LB	112LB	130LB
C. B. & Q.	61971	61912-R		72269V	
G. N.	3107-27-1	3107-25-1	3107-69-1	3107-84-1	
N. P.	T-11-3	T-11-3R	T-11-3C	T-11-3D	T-11-3A
S. P. & S.	7-3	7-3			

BURLINGTON NORTHERN INC.
STANDARD PLAN
16'-6" SWITCH POINT

DERAIL

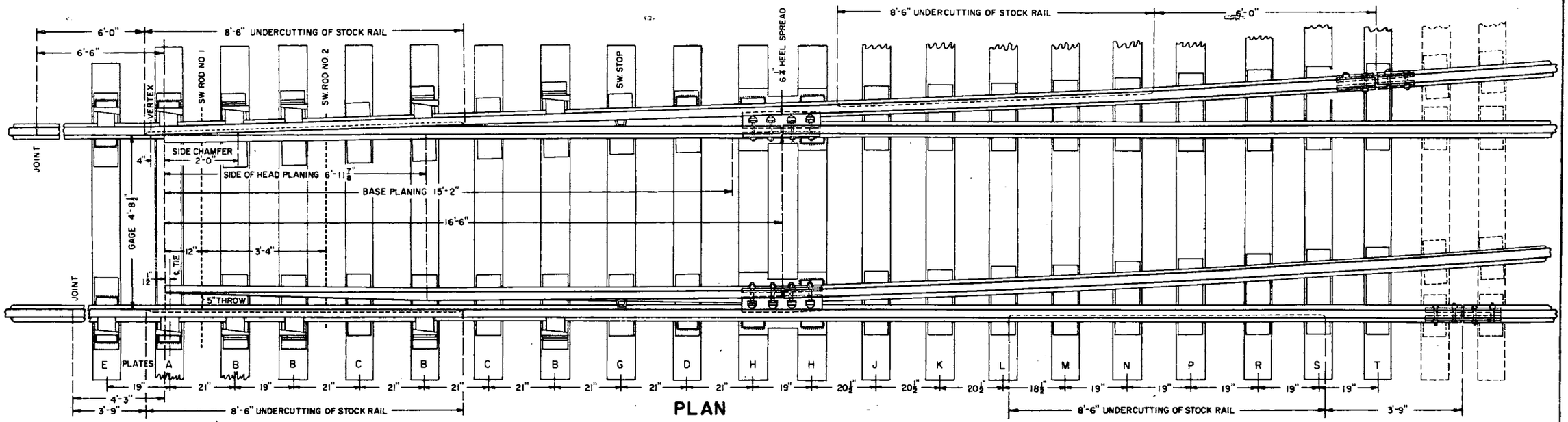
FOR USE WITH 90LB TO 130LB RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1973

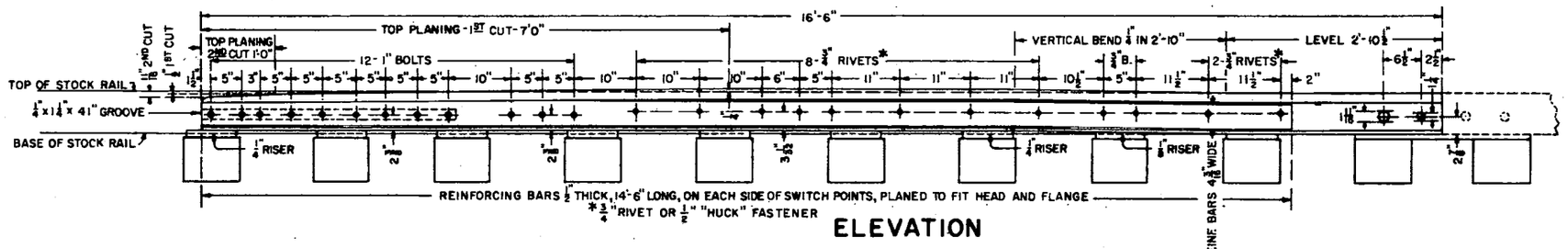
Recommended
B. H. Anderson
Asst. Vice President Engineering

Approved
L. B. Shington
Vice President, Operations

Dwg. Nº C-1706.1



PLAN



ELEVATION

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.

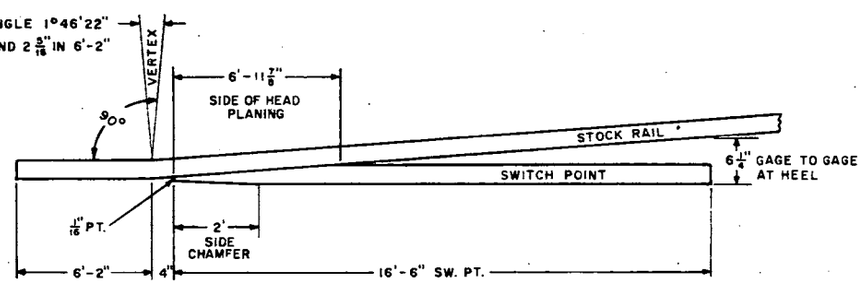
SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

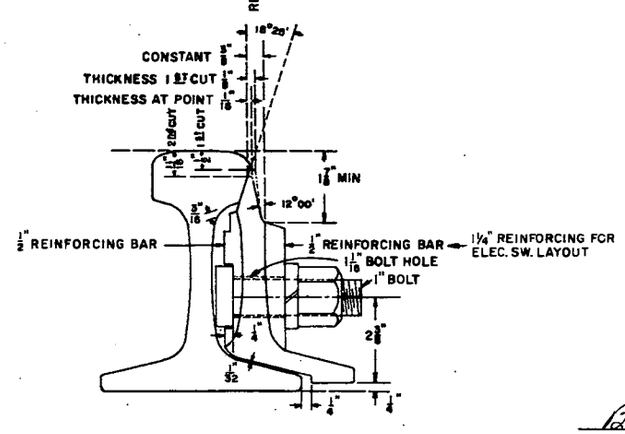
WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

MANGANESE TIP INSERTS.
ADJUSTABLE MANGANESE SWITCH POINT GUARD.



DETAIL OF STOCK RAIL BENDING AND SWITCH ANGLE



SECTION AT POINT

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH
112 LB. R.E. RAIL (UNDERCUT)

ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971

Recommended: B. H. Anderson, Asst. Vice President Engineering

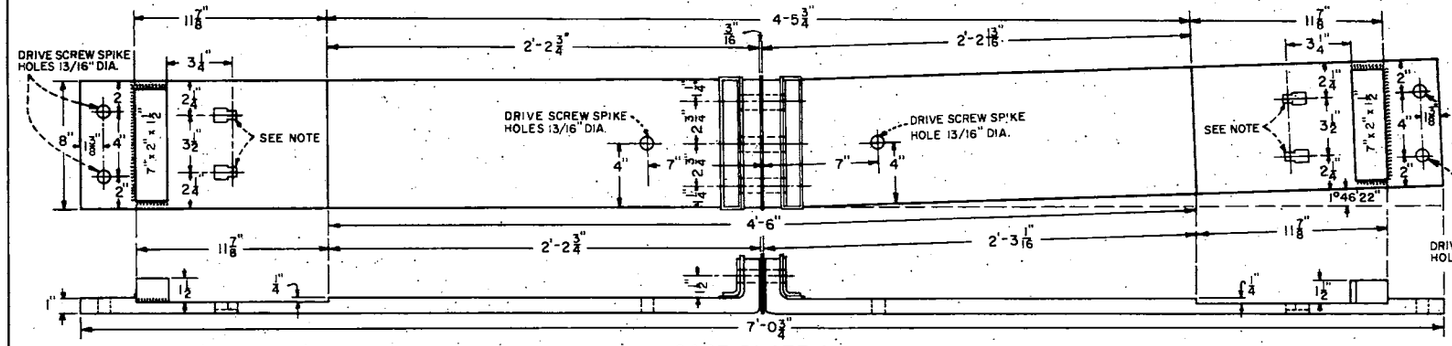
Approved: J. C. Rinaldo, Vice President, Operations

Revised 6-73, 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1707.2

(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1707.3

SHEET 1



GAGE PLATE A (INSULATED TYPE)

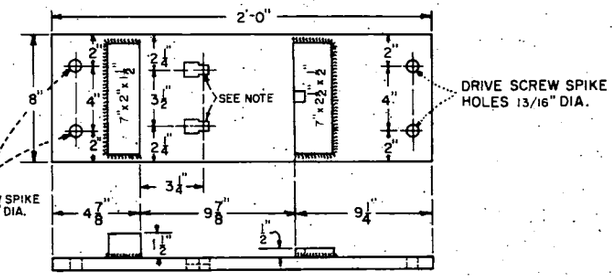


PLATE E

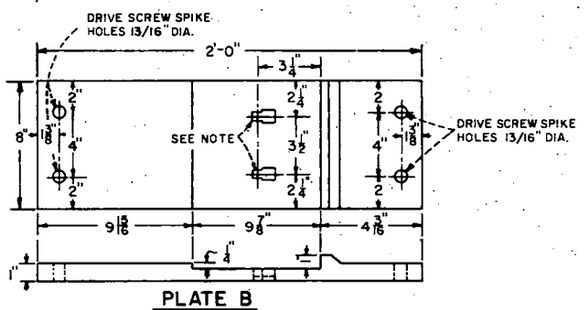
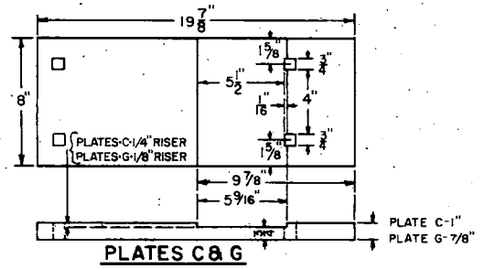


PLATE B



PLATES C & G

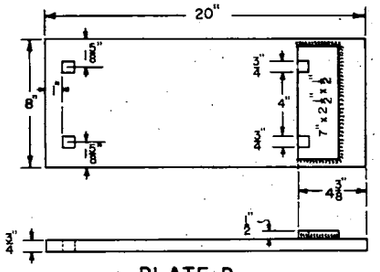
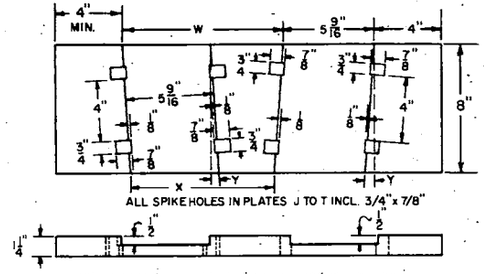
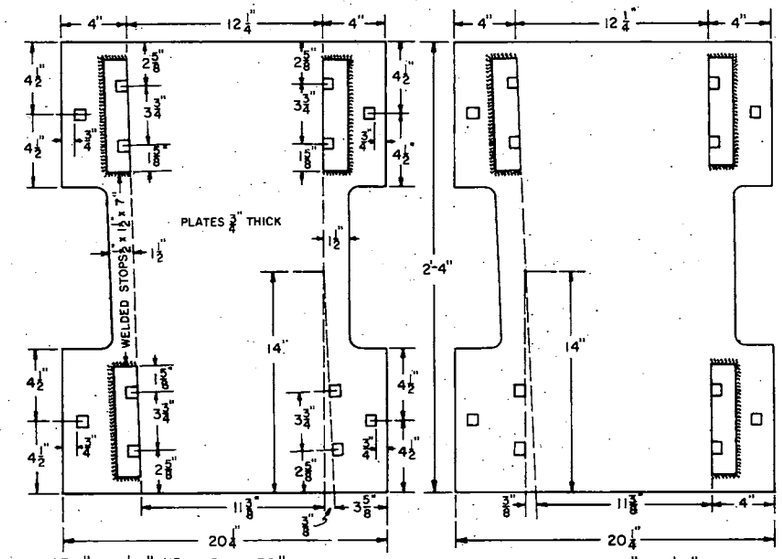


PLATE D



PLATES J, K, L, M, N, P, R, S, T.

MARK PLATES J TO T INCL. AS SHOWN "L.H."
MAKE OPPOSITE AND MARK "R.H."



MARK "H-16'-6"-112 LH.PL.LH.T.O."
MAKE OPPOSITE FOR
"H-16'-6"-112 RH.PL.RH.T.O."

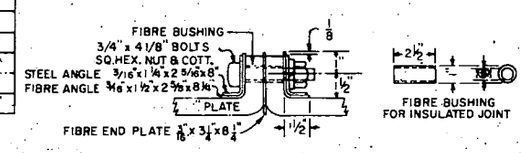
TWO TIE HEEL PLATE H

MARK "H-16'-6"-112 RH.PL.LH.T.O."
MAKE OPPOSITE FOR
"H-16'-6"-112 LH.PL.RH.T.O."

DIMENSIONS OF PLATES J THRU T						
	NO. 7 T.O.			NO. 9 T.O.		
PLATE	W	X	Y	W	X	Y
J	7 7/16"	7 3/16"	5/32"	7 5/16"	7 1/16"	1/8"
K	8 5/16"	7 15/16"	3/16"	8"	7 3/4"	1/8"
L	9 1/4"	8 7/8"	3/16"	8 3/4"	8 1/2"	1/8"
M	10 3/16"	9 3/4"	7/32"	9 1/2"	9 3/16	5/32"
N	11 3/16"	10 3/4"	7/32	10 1/4"	9 7/8"	3/16"
P	12 5/16"	11 13/16"	1/4"	11 3/16"	10 7/8"	5/32"
R	13 1/2"	13"	1/4"	12 3/16"	11 3/4"	7/32"
S				13 3/16"	12 11/16"	1/4"
T				14 1/8"	13 11/16"	7/32"

NOTE:

PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL. (THUS 16-6-A-112)
12 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH
46 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG. TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARDWOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH
112 LB. R.E. RAIL
(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

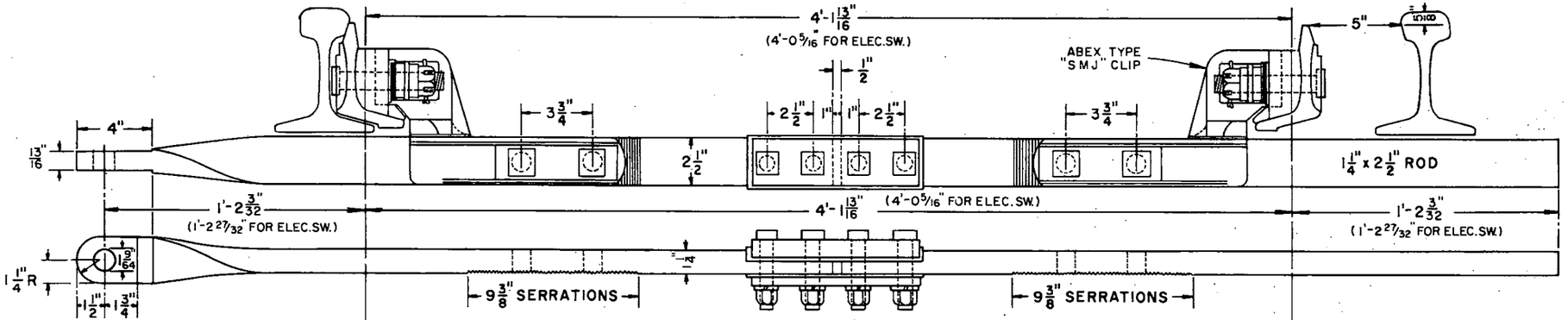
Recommended: Asst Vice President Engineering

Approved: Vice President, Operations

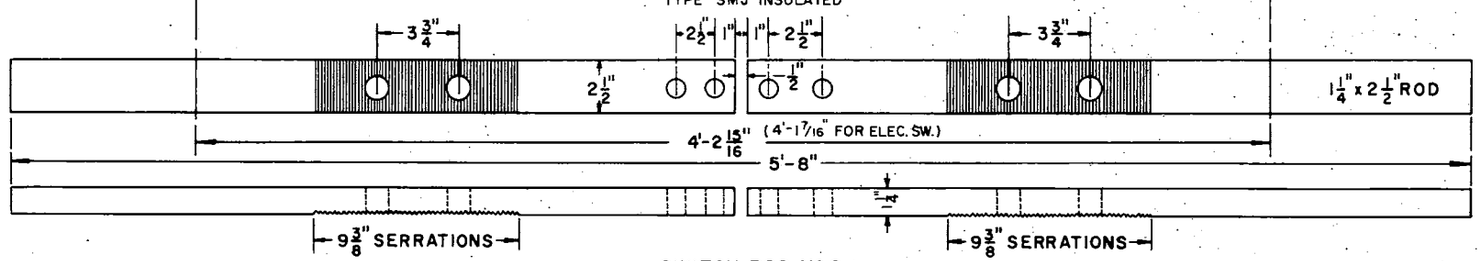
Dwg. Nº C-1707.3

THIS PLAN SUPERSEDES PLAN Nº C-1707.2

SHEET 3

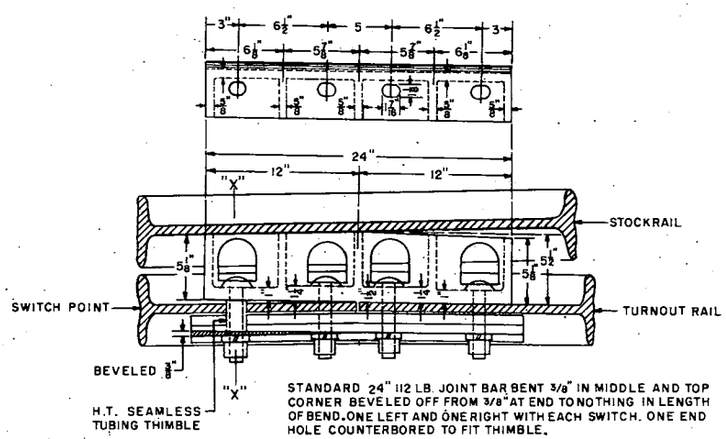


SWITCH ROD Nº 1
TYPE "SMJ" INSULATED

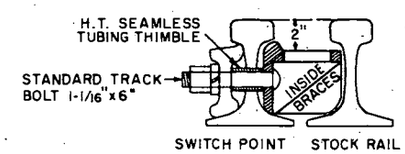


SWITCH ROD Nº 2
TYPE "SMJ" INSULATED

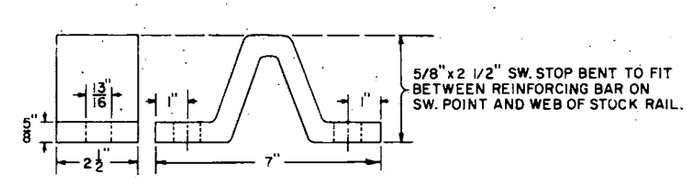
NOTE:
MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITIONS AS SHOWN ON PLANS.
FOR ELEC. SW. LAYOUT FURNISH 1¼" REINFORCING BARS FOR GAGE SIDE OF SW. POINTS WITH 1"x6¼" WEB BOLTS FOR RECESSED HEAD AND 1"x6½" FOR NON RECESSED HEAD.



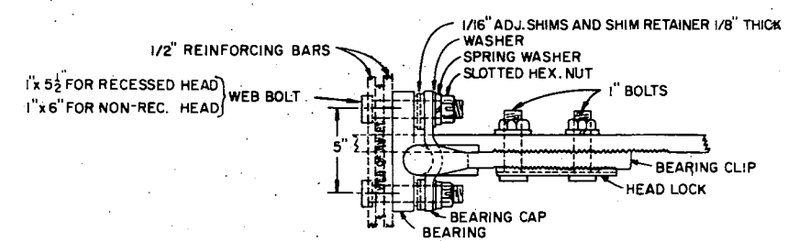
CAST STEEL HEEL BLOCK



SECTION THRU HEEL BLOCK AT "X"-"X"



SWITCH STOP



TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 112 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

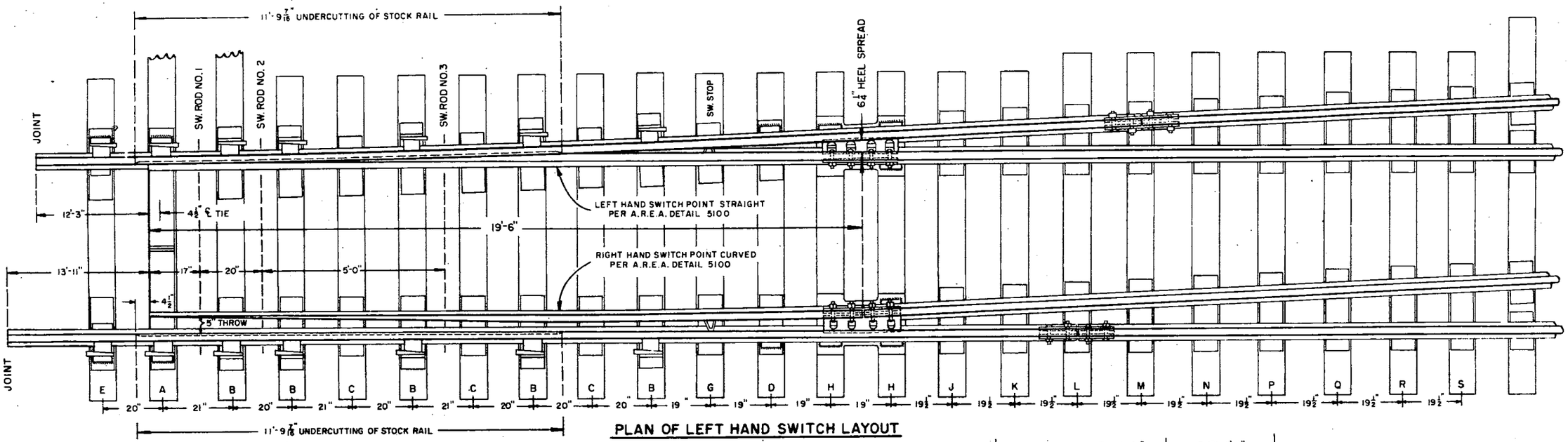
Recommended: Asst. Vice President Engineering

Approved: Vice President, Operations

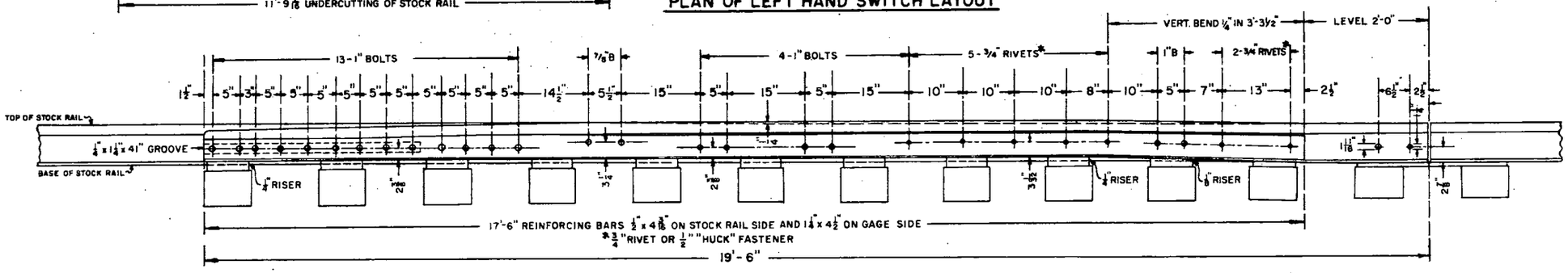
Dwg. Nº C-1707.1

THIS PLAN SUPERSEDES PLAN NO. C-1707.0

SHEET 2



PLAN OF LEFT HAND SWITCH LAYOUT



ELEVATION OF SWITCH LAYOUT

NOTE:

SWITCH SHALL CONFORM TO A.R.E.A. SPECIFICATIONS FOR SPECIAL TRACK WORK.
SURFACE HARDEN STOCK RAILS.

SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.
THE FOLLOWING OPTIONS MUST HAVE APPROVAL OF ASSISTANT VICE PRESIDENT ENGINEERING.

ADJUSTABLE MANGANESE SWITCH POINT GUARD.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
112 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971

Recommended — Asst. Vice President Engineering

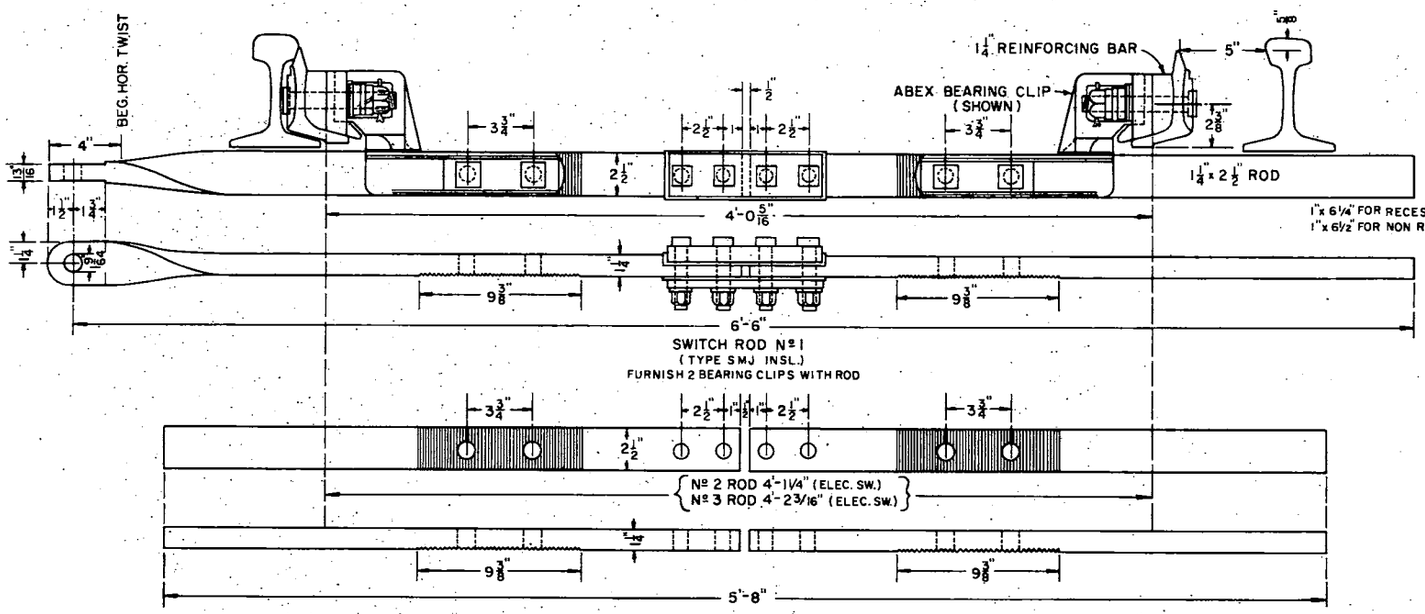
Approved — Vice President, Operations

Revised 6-73, 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1708.2

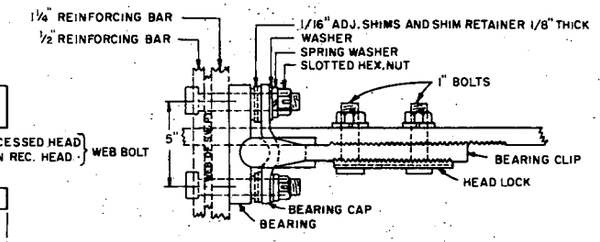
(FOR ELECTRIC SWITCH LAYOUT SEE SHEETS 5 & 6)

Dwg. Nº C-1708.3

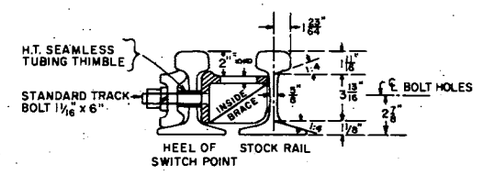
SHEET 1



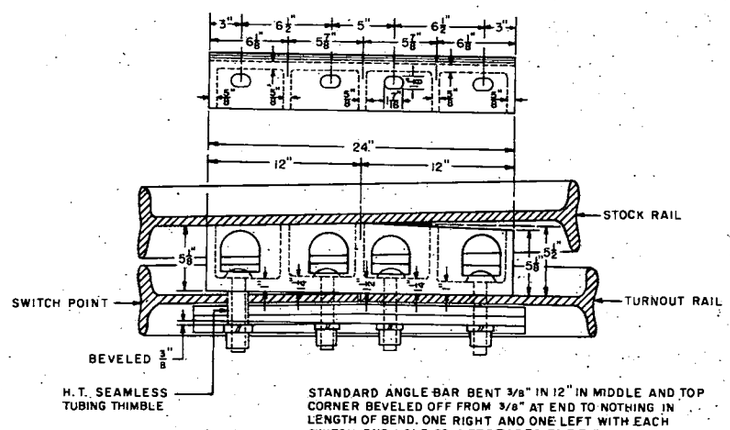
NOTE: *MANUFACTURE SHALL DELIVER SWITCH RODS WITH CLIPS APPLIED IN POSITION AS SHOWN ON PLANS.*



TOP VIEW OF BEARING CLIP ASSEMBLY
(FURNISH 2 BEARING CLIPS WITH EACH ROD)

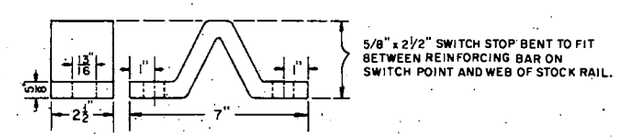


SECTION THRU HEEL BLOCK AT "X-X"



STANDARD ANGLE BAR BENT 3/8" IN 12" IN MIDDLE AND TOP CORNER BEVELED OFF FROM 3/8" AT END TO NOTHING IN LENGTH OF BEND. ONE RIGHT AND ONE LEFT WITH EACH SWITCH. END HOLE COUNTERBORED TO FIT THIMBLE.

CAST STEEL HEEL BLOCK



SWITCH STOP

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
112 LB. R.E. RAIL
(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

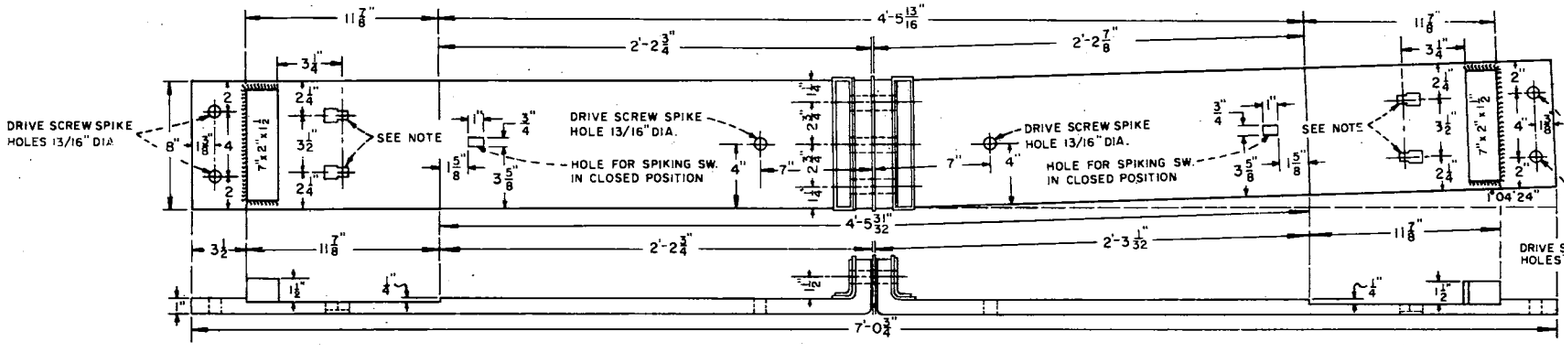
Recommended — Asst Vice President Engineering

Approved — Vice President Operations

Dwg. Nº C-1708.2

THIS PLAN SUPERSEDES PLAN Nº C-1708.1

SHEET 2



GAGE PLATE A (INSULATED TYPE)

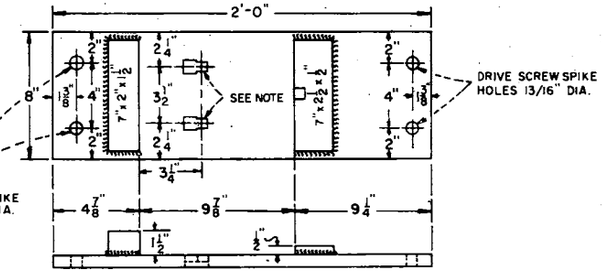


PLATE E

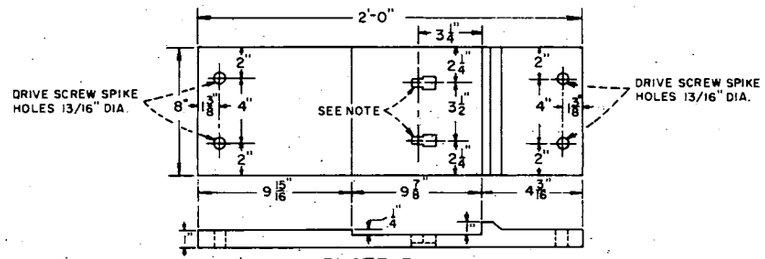
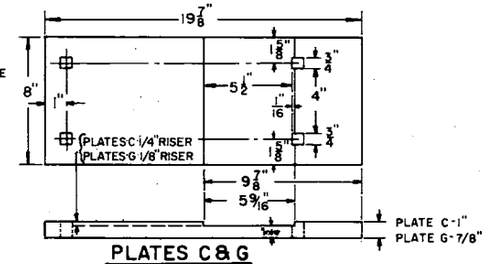


PLATE B



PLATES C & G

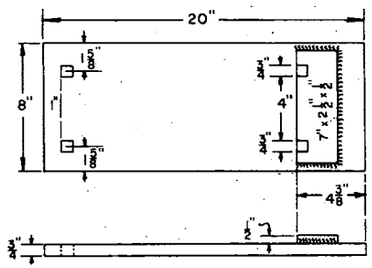
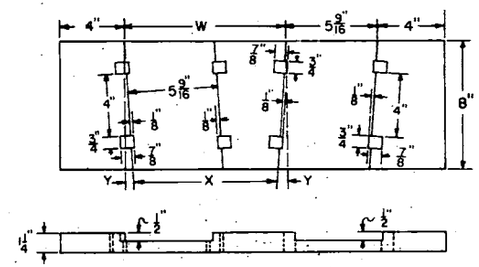
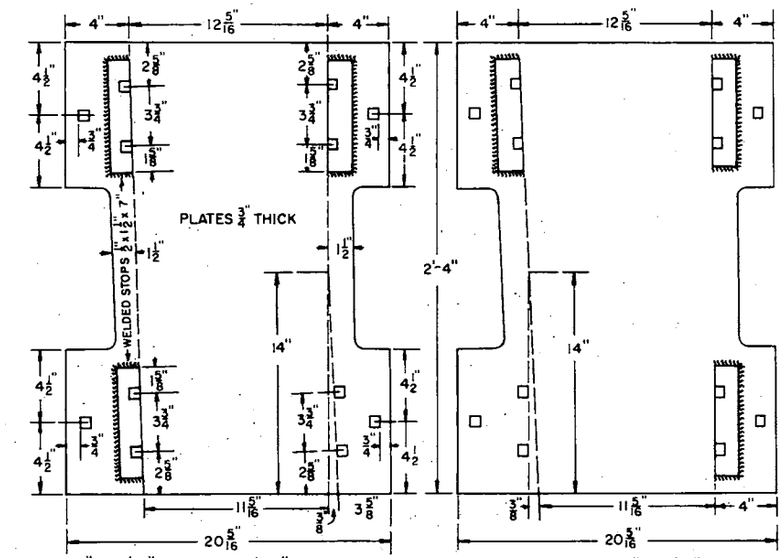


PLATE D



PLATES J, K, L, M, N, P, Q, R, S.

ALL SPIKE HOLES IN PLATES J TO S INCL. 3/4" x 7/8"



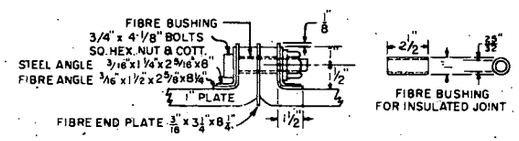
MARK "H-19'-6"-112 L.H.PL. L.H.T.O." MAKE OPPOSITE FOR "H-19'-6"-112 RH.PL.RH.T.O."

TWO TIE HEEL PLATE H

MARK "H-19'-6"-112 RH.PL.LH.T.O" MAKE OPPOSITE FOR "H-19'-6"-112 LH.PL.RH.T.O."

NOTE:
PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN PLATES TO BE STAMPED WITH SWITCH NUMBER PLATE NUMBER AND WEIGHT OF RAIL (THUS 19'-6"-A-112)
14 SECURITY ADJUSTABLE RAIL BRACES TO BE FURNISHED WITH EACH SWITCH.
54 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG TO BE FURNISHED WITH EACH SWITCH.
BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFT WOOD TIES, AND 9/16" HOLES IN HARDWOOD TIES.
SLOTTED HOLES TO PERMIT TOP INSERTION OF BOLTS FOR ADJUSTABLE RAIL BRACES.

TABLE OF DIMENSIONS			
PLATES J THRU S			
PLATES	W	X	Y
J	7 7/16"	7 1/8"	5/32"
K	8 7/32"	7 29/32"	5/32"
L	9	8 23/32"	9/64"
M	9 27/32"	9 1/2"	11/64"
N	10 23/32"	10 3/8"	11/64"
P	11 9/16"	11 7/32"	11/64"
Q	12 7/16"	12 1/16"	3/16"
R	13 7/16"	13 1/16"	3/16"
S	14 3/8"	13 31/32"	13/64"



INSULATED JOINTS
1-SET PARTS REQ.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19 FT. 6 IN. CURVED SWITCH
112 LB. R.E. RAIL
(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

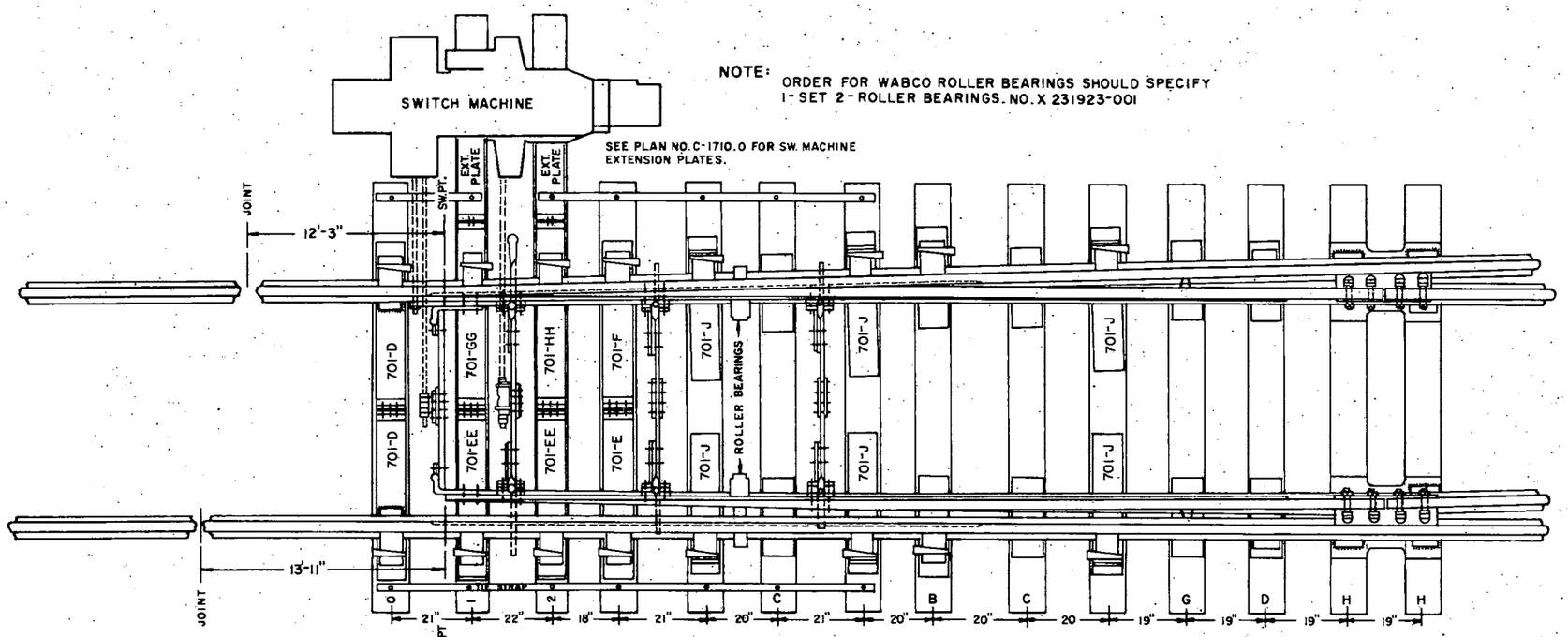
Recommended: Asst. Vice President Engineering

Approved: Vice President, Operations

Dwg. No C-1708.2

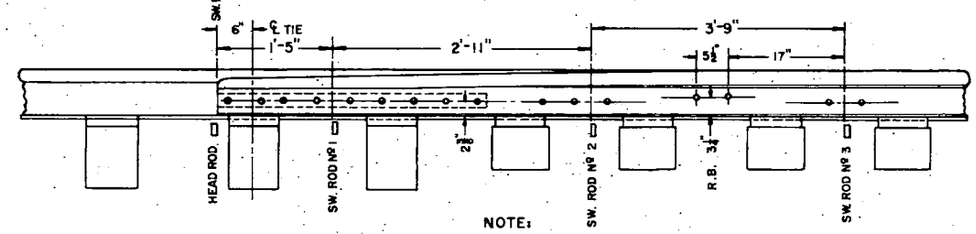
THIS PLAN SUPERSEDES PLAN No C-1708.1

SHEET 3



NOTE: ORDER FOR WABCO ROLLER BEARINGS SHOULD SPECIFY 1-SET 2-ROLLER BEARINGS. NO. X 231923-001

SEE PLAN NO. C-1710.0 FOR SW. MACHINE EXTENSION PLATES.



LEFT HAND SWITCH OPERATION SHOWN

NOTE:

GAGE PLATES ARE TO BE DELIVERED INSULATED AND ASSEMBLED AS SHOWN.

ALL GAGE PLATES WITH 701 SERIES ARE TO BE MARKED THUS 701-GG L.H., 701-HH L.H. ETC. MARK OPPOSITE FOR R.H.

FURNISH OFFSET EXTENSION PLATE PER PLAN C-1710.0 ONLY IF ORDERED.

SURFACE HARDEN STOCK RAILS.

FURNISH 16-SECURITY ADJUSTABLE RAIL BRACES COMPLETE WITH WEDGES, BOLTS, NUTS AND WASHERS.
" 62-DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG.
" 14-3/4" x 6" LAG SCREWS FOR TIE STRAPS.

NOTE:

BORE TIES IN FIELD FOR DRIVE SCREW SPIKES, 1/2" HOLE IN SOFT WOOD TIES AND 9/16" IN HARDWOOD TIES.

ELECTRIC SWITCH REQUIRES THE USE OF GAGE PLATES AS SHOWN ON THIS PLAN. FOR PLATES B, C, D, G AND H SEE PLAN C-1708.1 SHEET 3

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH 112 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1973.

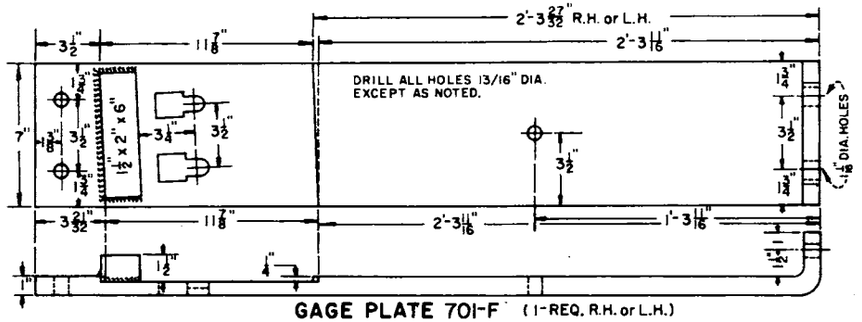
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: S. E. Humphrey, Vice President, Operations

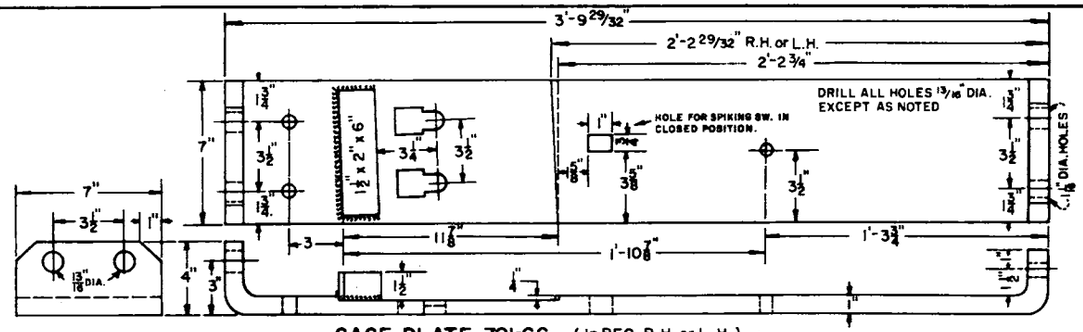
Dwg. Nº C-1708.1

SHEET 5

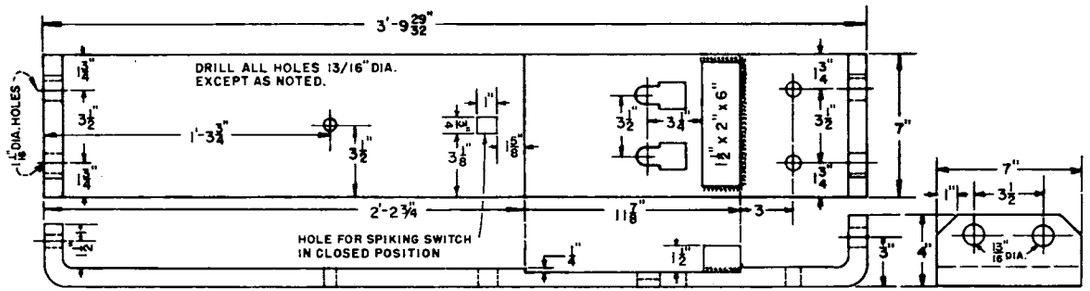
THIS PLAN SUPERSEDES PLAN NO. C-1708.0



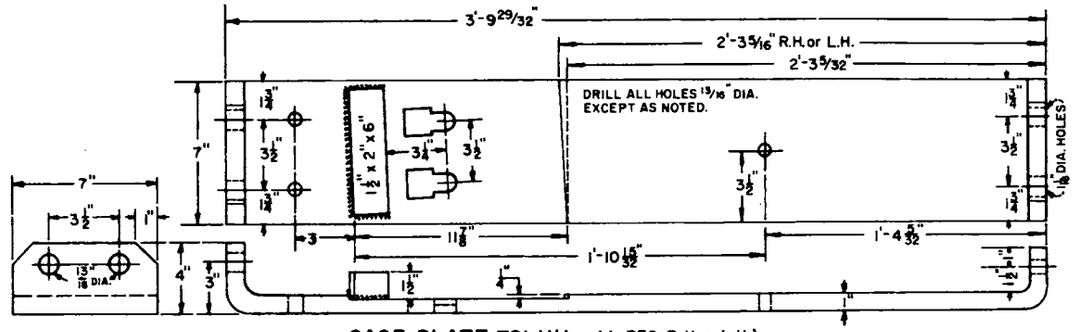
GAGE PLATE 701-F (1-REQ. R.H. or L.H.)



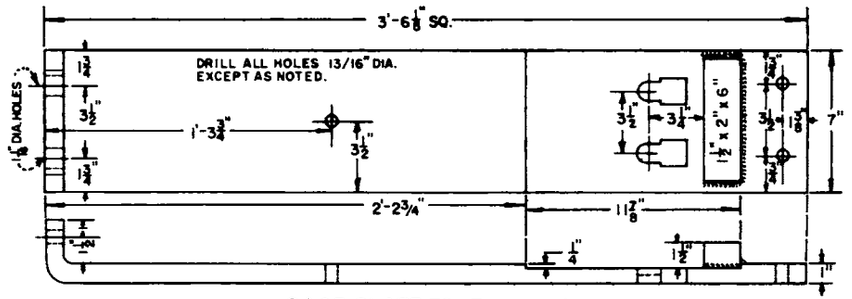
GAGE PLATE 701-GG (1-REQ. R.H. or L.H.)



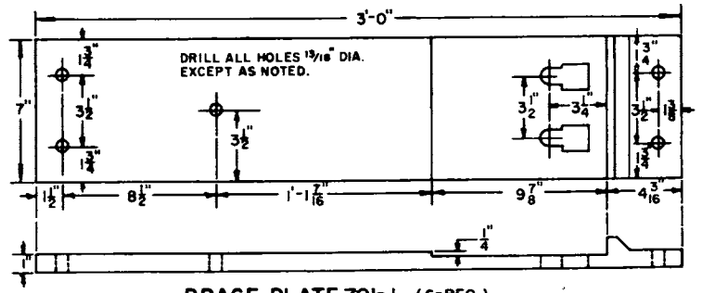
GAGE PLATE 701-EE (2-REQ.)



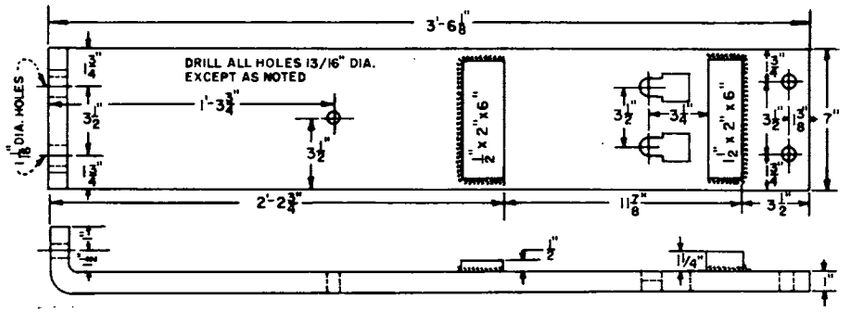
GAGE PLATE 701-HH (1-REQ. R.H. or L.H.)



GAGE PLATE 701-E (1-REQ.)



BRACE PLATE 701-J (6-REQ.)



GAGE PLATE 701-D (2-REQ.)

NOTE
PLATES SHOWN ARE IDENTICAL TO PLATES ON PLAN Nº C-1701.0 SHEET 6.

ALL TURNED UP PLATE ENDS SHALL HAVE BEVELED CORNERS.

BURLINGTON NORTHERN INC.
STANDARD PLAN

19'-6" CURVED ELECTRIC SWITCH
112 LB. R.E. RAIL
(GAGE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. OCT. 1972

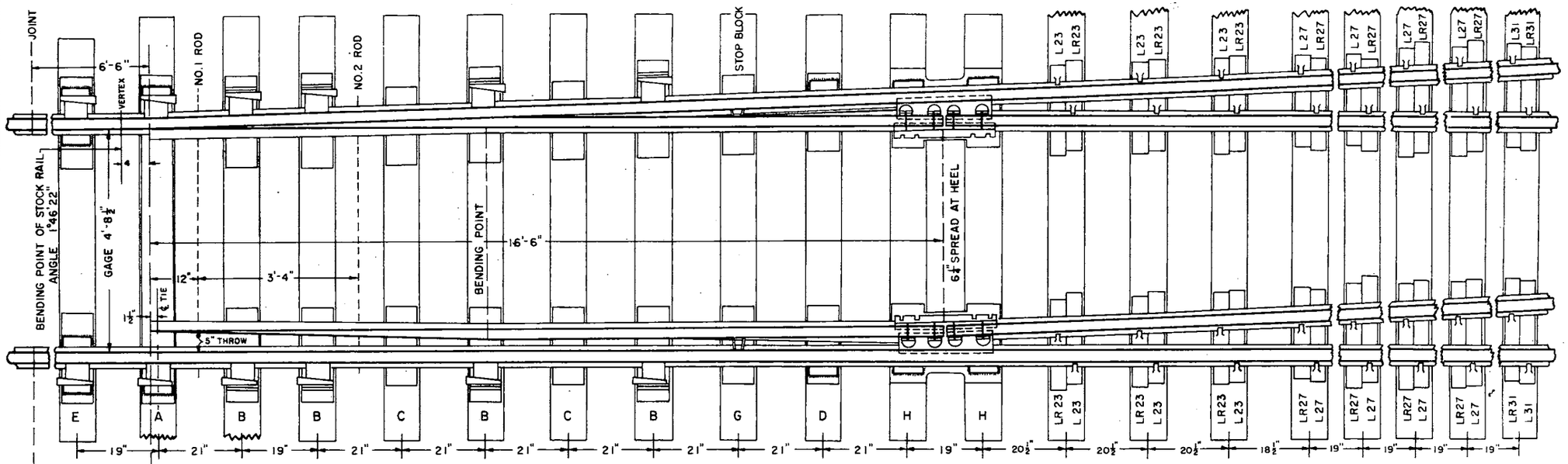
Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: K. E. Thington, Vice President, Operations

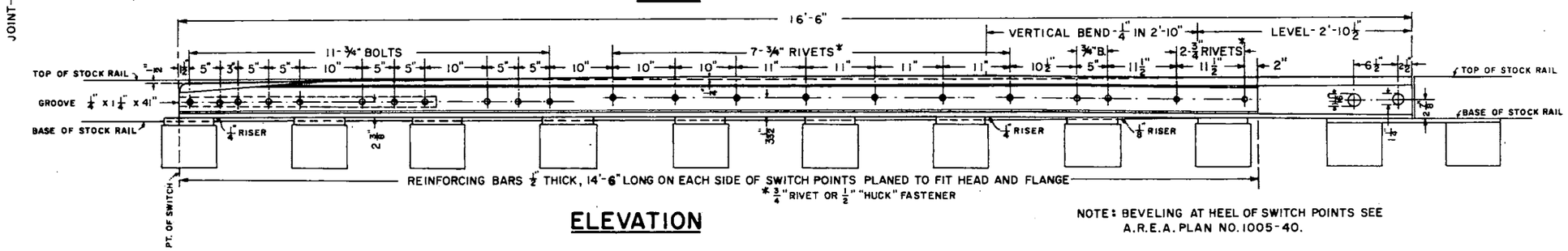
Revised 6-73, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1708.1

Dwg. Nº C-1708.2

SHEET 6



PLAN



ELEVATION

NOTE: BEVELING AT HEEL OF SWITCH POINTS SEE A.R.E.A. PLAN NO. 1005-40.

NOTE:
SWITCH TO BE BUILT ACCORDING TO A.R.E.A. SPECS. PLAN 112-55 EXCEPT AS NOTED. POINT DETAIL PER A.R.E.A. PLAN 6100.

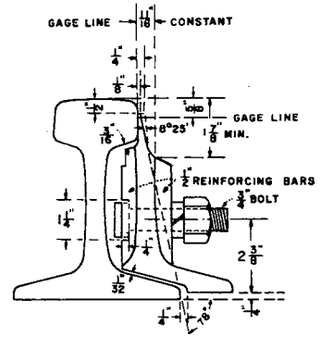
SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS.

WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

USE OF THIS PLAN FOR LOCATIONS OTHER THAN YARDS MUST HAVE APPROVAL OF A.V.P. ENGINEERING.

THE HOOK TWIN PLATES AS SHOWN ON THIS PLAN MAY BE REPLACED BY PLATES "J" THRU "T" B.N. INC. PLAN C-1707.0. ON IMPORTANT TRACKS SUCH AS LADDERS AND BRANCH LINE MAIN TRACKS THAT DO NOT REQUIRE THE UNDERCUT SWITCH POINTS.

KNIFE POINTS



SECTION AND PLANING AT POINT

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH
112 LB. R.E. RAIL
(KNIFE POINT SWITCH FOR YARD USE ONLY)

ENGINEERING DIVISION, ST. PAUL, MINN. NOV. 1971

Recommended
Asst. Vice President Engineering

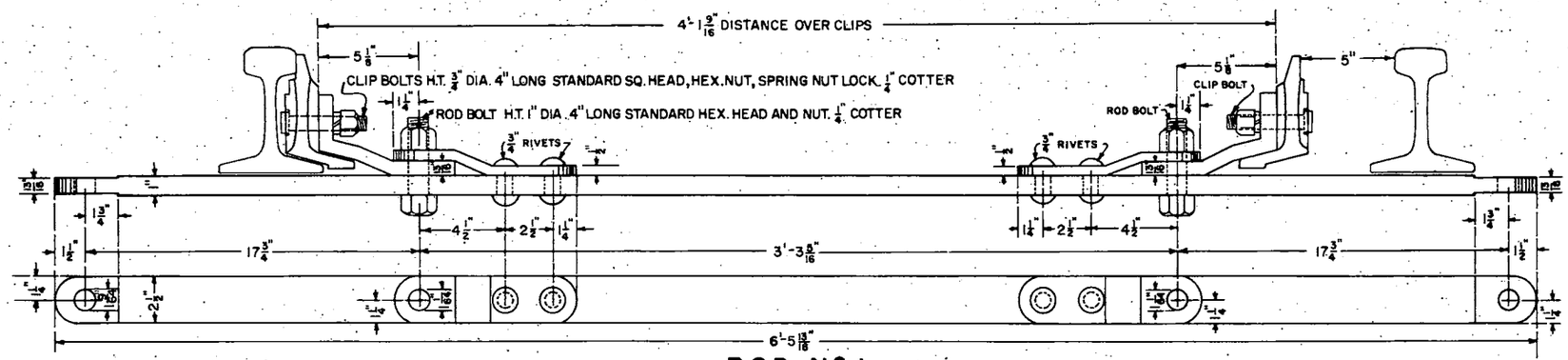
Approved
Vice President, Operations

Revised 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1709.1

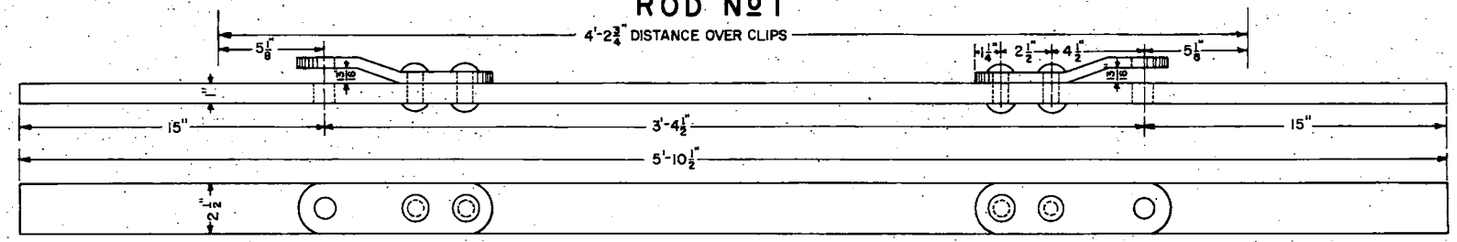
(FOR ELECTRIC SWITCH LAYOUT SEE Dwg Nº C-1707.0)

Dwg. Nº C-1709.2

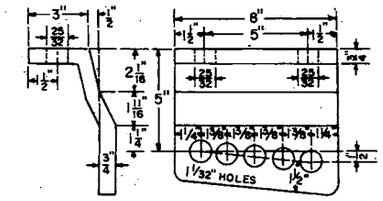
SHEET 1



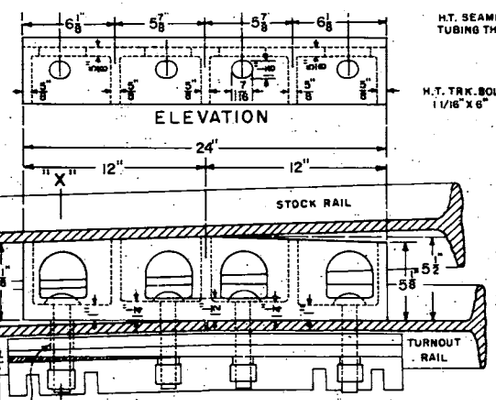
ROD Nº 1



ROD Nº 2

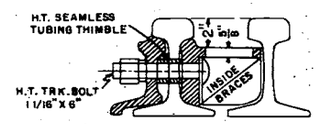


ROD CLIPS



STANDARD ANGLE BAR BENT 3/8" IN 12" IN MIDDLE AND TOP CORNER BEVELED OFF FROM 3/8" AT END TO NOTHING IN LENGTH OF BEND. ONE RIGHT AND ONE LEFT WITH EACH SWITCH. END HOLE COUNTERBORED TO FIT THIMBLE.

CAST STEEL HEEL BLOCK



SECTION THROUGH HEEL BLOCK AT X-X

BURLINGTON NORTHERN INC.

STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 112 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended

Asst. Vice President Engineering

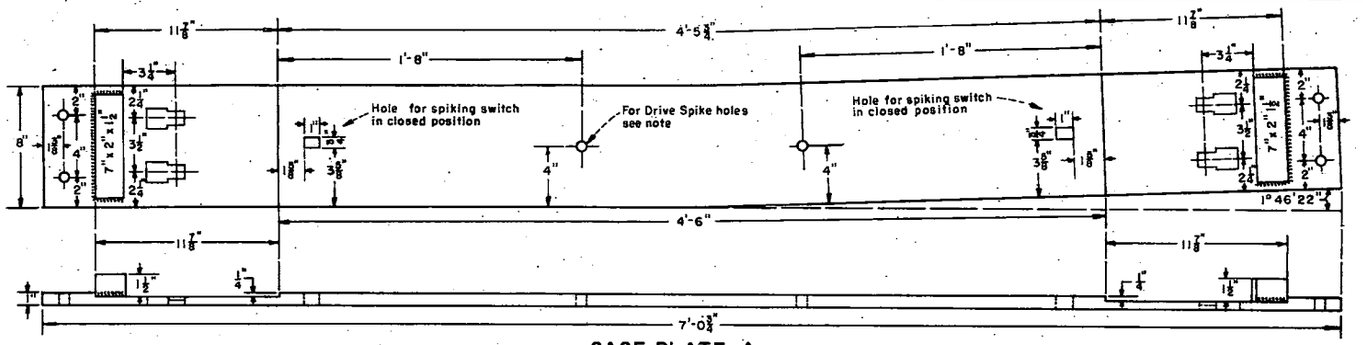
Approved

Vice President, Operations

Dwg. Nº C-1709.2

THIS PLAN SUPERSEDES PLAN Nº C-1709.1

SHEET 2



GAGE PLATE-A

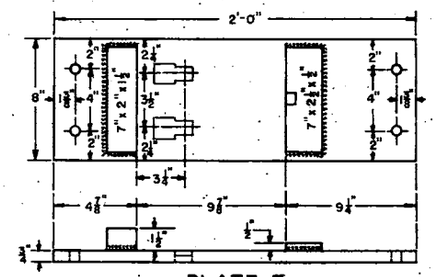


PLATE-E

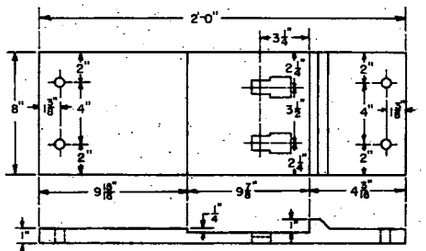


PLATE-B

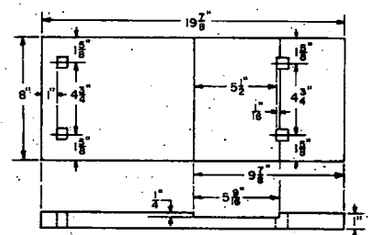


PLATE-C

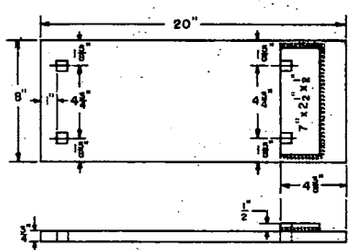


PLATE-D

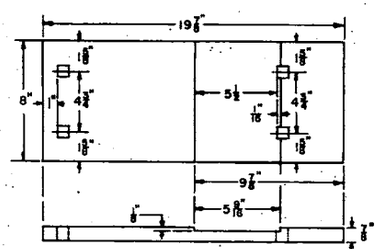
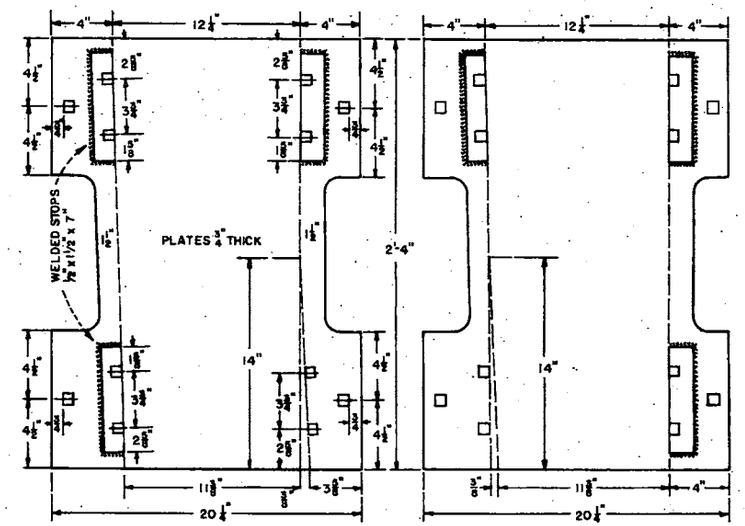


PLATE-G



MARK "H" 16'-6" 112 LH. PL. LH. T.O.
MAKE OPPOSITE FOR
"H"-16'-6" 112 RH. PL. RH. T.O.

MARK "H" 16'-6" 112 RH. PL. LH. T.O.
MAKE OPPOSITE FOR
"H"-16'-6" 112 LH PL. RH. T.O.

TWO TIE HEEL PLATE H

NOTE:

PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN. DRIVE SCREW SPIKE HOLES TO BE 13/16" DIA. ALL PLATES TO BE MARKED WITH NUMBER LETTERS AND WEIGHT OF RAIL, THUS - 16'-6" - A - 112. FURNISH 12 SECURITY ADJUSTABLE RAIL BRACES WITH EACH SWITCH.

46 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG. TO BE FURNISHED WITH EACH SWITCH. BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFTWOOD TIES AND 9/16" HOLES IN HARDWOOD TIES. FURNISH 6, L-23, 6, LR-23, 8, L-27, 8, LR-27, 2, L-31, 2, LR-31 HOOK TWIN TIE PLATES PER A.R.E.A. PLAN 241-55.

THIS PLAN SUPERSEDES PLAN NO. C-1709.0

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 112 LB. R.E. RAIL (GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended: B. H. Anderson, Asst. Vice President Engineering

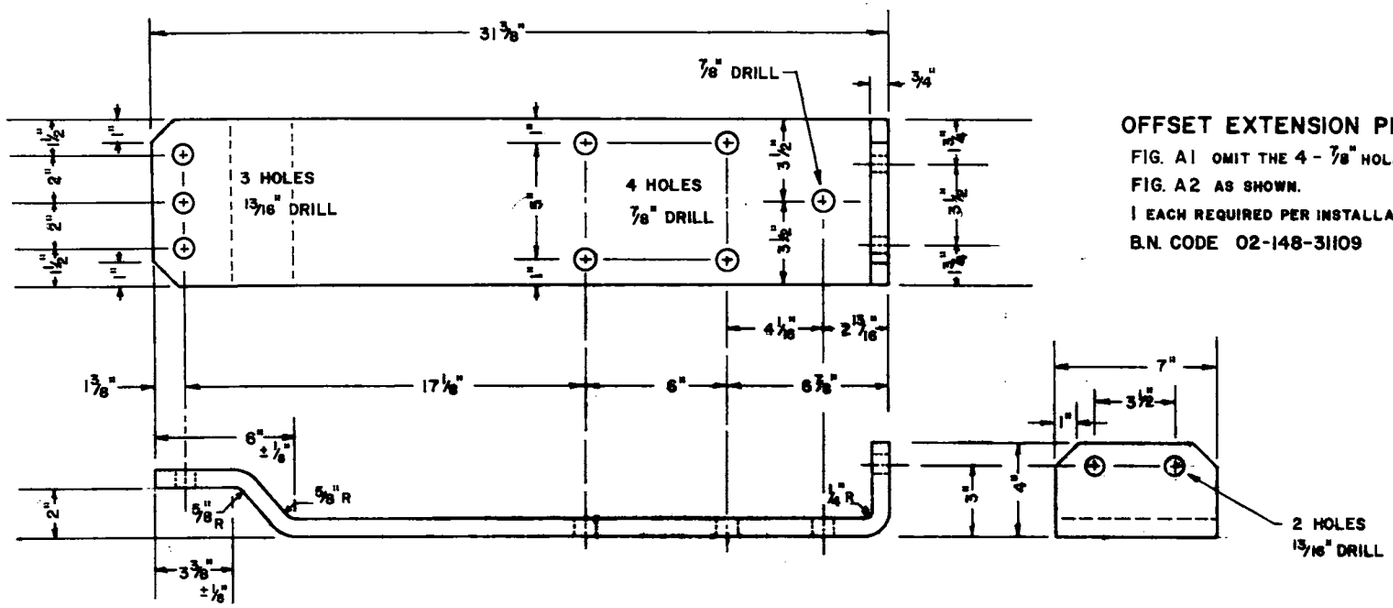
Approved: S. B. Shington, Vice President, Operations

Dwg. Nº C-1709.1

SHEET 3

NOTES

1. THE OFFSET EXTENSION PLATES COMPRISE PART OF THE STANDARD ELECTRIC SWITCH INSTALLATION.
2. THE STRAIGHT EXTENSION PLATES ARE FOR USE WITH DAPPED TIES IN SPECIAL SWITCH INSTALLATION.
3. SIGNAL SECTION TO SPECIFY TYPE PLATE REQUIRED.



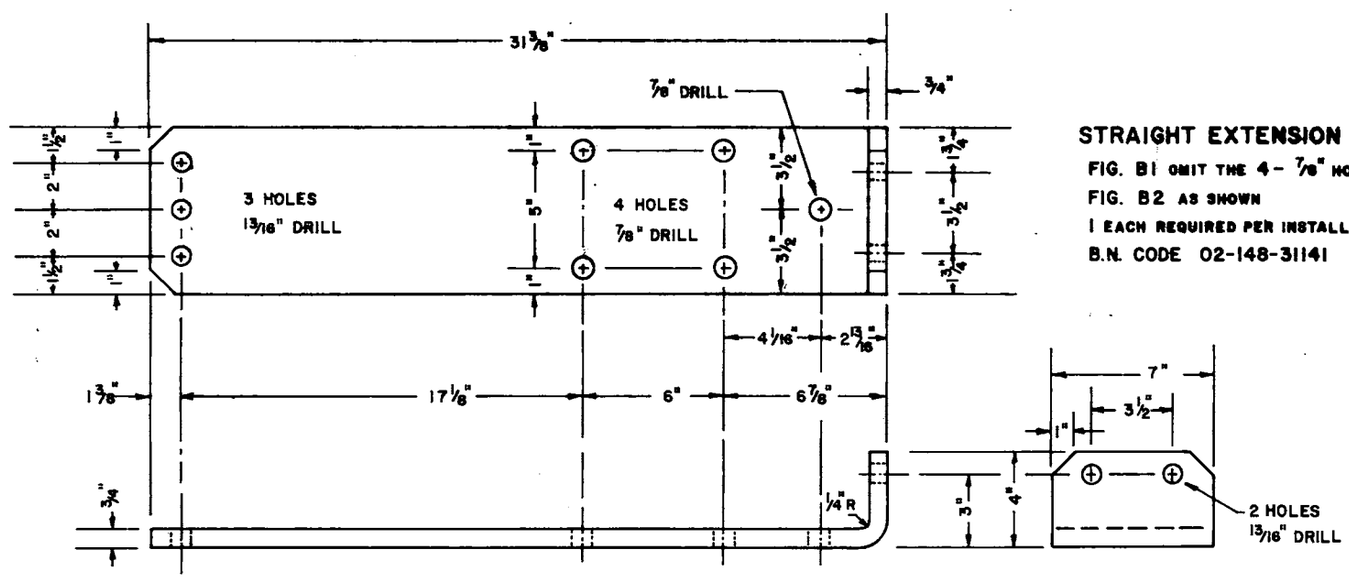
OFFSET EXTENSION PLATE

FIG. A1 OMIT THE 4 - 7/8" HOLES

FIG. A2 AS SHOWN.

1 EACH REQUIRED PER INSTALLATION

B.N. CODE 02-148-31109



STRAIGHT EXTENSION PLATE

FIG. B1 OMIT THE 4 - 7/8" HOLES

FIG. B2 AS SHOWN

1 EACH REQUIRED PER INSTALLATION

B.N. CODE 02-148-31141

BURLINGTON NORTHERN INC.

STANDARD PLAN

EXTENSION PLATES USED WITH ELECTRIC SWITCHES

ENGINEERING DIVISION, ST. PAUL, MINN. APRIL 12, 1977

Recommended: B.H. Anderson, Asst. Vice President Engineering

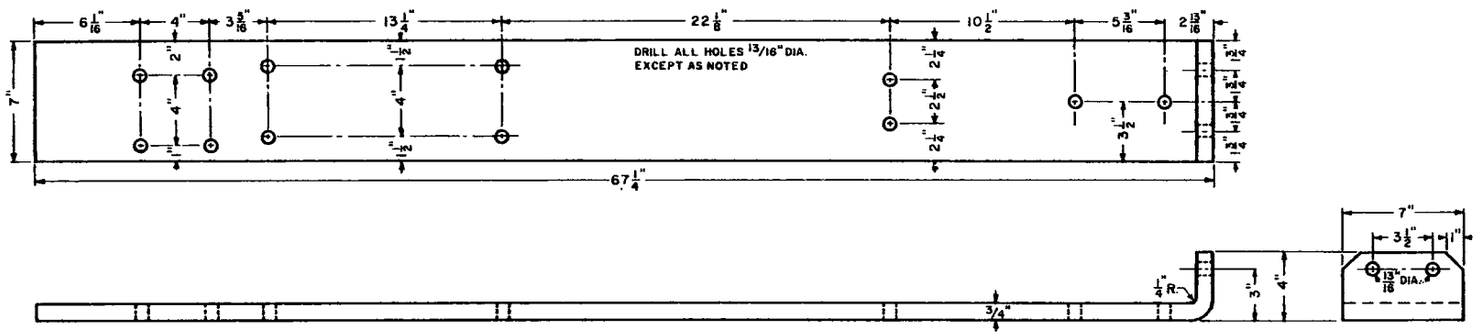
Approved: H.B. Houghton, Vice President, Operations

DB-0002

Dwg. No C-1710.2 SHEET 1

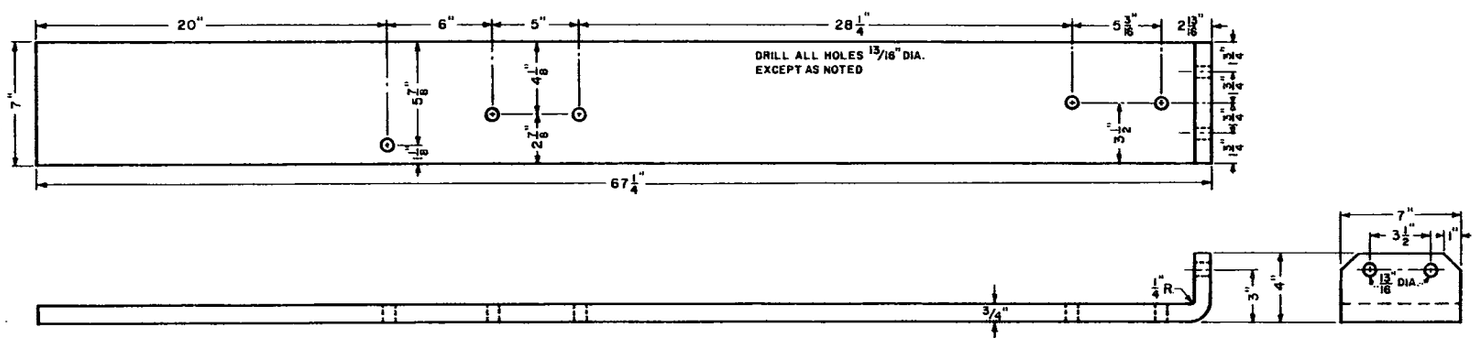
Revised 8-76 4-77

THIS PLAN SUPERSEDES PLAN No 1710.1



EXTENSION PLATE Nº 1 & 2

(1 - REQ EACH)



EXTENSION PLATE Nº 5

(1 - REQ. EACH)

BURLINGTON NORTHERN INC.
STANDARD PLAN

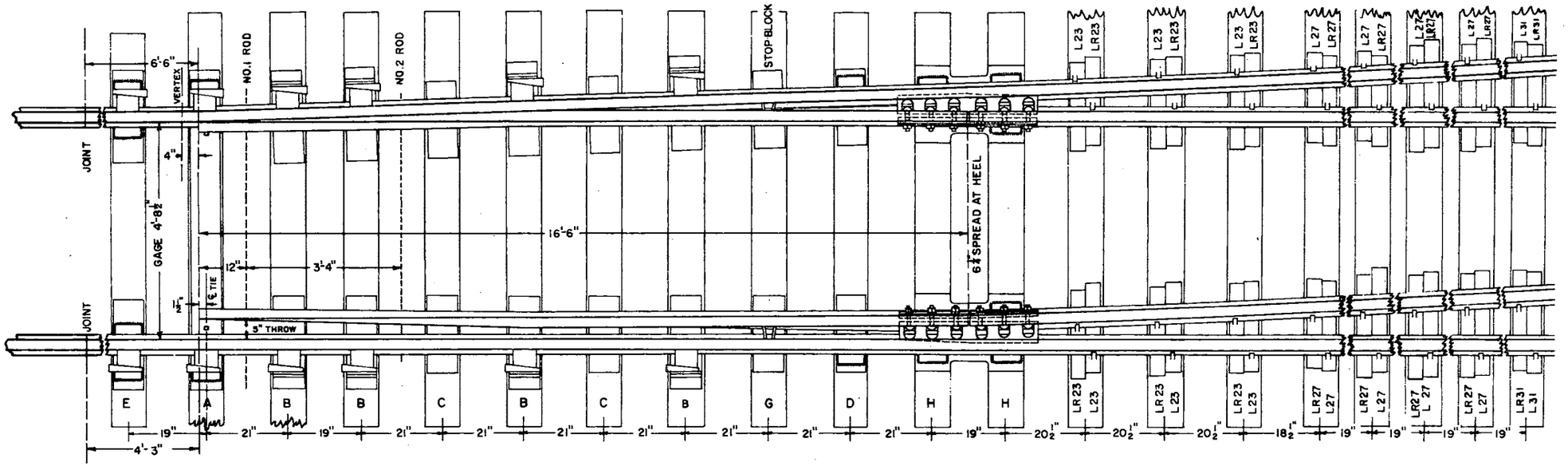
EXTENSION PLATES Nº 1,2 & 5 USED WITH SPRING SWITCHES

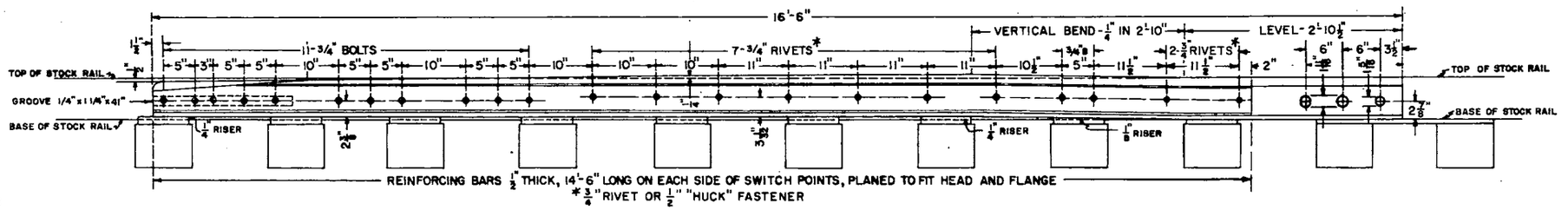
ENGINEERING DIVISION, ST. PAUL, MINN. SEPT, 1974

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. Nº C-1710.0 SHEET 2





NOTE:
SWITCH TO BE BUILT ACCORDING TO A.R.E.A. SPECS. PLAN 112-55 EXCEPT AS NOTED. POINT DETAIL PER A.R.E.A. PLAN 6100. SWITCH POINTS TO BE MILLED FOR CAL ROD HEATERS. WHEN ORDERING SPECIFY R.H. OR L.H. SWITCH.

USE OF THIS PLAN FOR LOCATIONS OTHER THAN YARDS MUST HAVE APPROVAL OF A.V.P. ENGINEERING.

THE HOOK TWIN PLATES AS SHOWN ON THIS PLAN MAY BE REPLACED BY PLATES "J" THRU "T" B.N.INC. PLAN C-1700.2 ON IMPORTANT TRACKS SUCH AS LADDERS AND BRANCH LINE MAIN TRACKS THAT DO NOT REQUIRE THE UNDERCUT SWITCH POINTS.

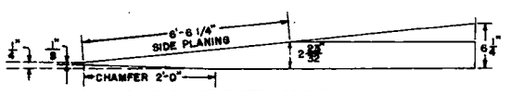
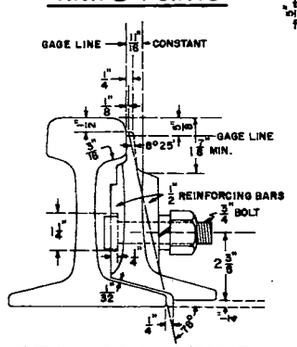
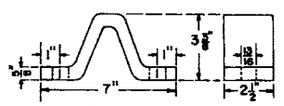


DIAGRAM OF SWITCH ANGLE

KNIFE POINTS



SECTION AND PLANING AT POINT



STOP BLOCK
2 REQUIRED

NOTE: BEVELING AT HEEL OF SWITCH POINTS SEE A.R.E.A. PLAN NO. 1005-40.

BURLINGTON NORTHERN INC.
STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH
115 LB. R.E. RAIL
(KNIFE POINT SWITCH FOR YARD USE ONLY)

ENGINEERING DIVISION, ST. PAUL, MINN. DEC. 1972

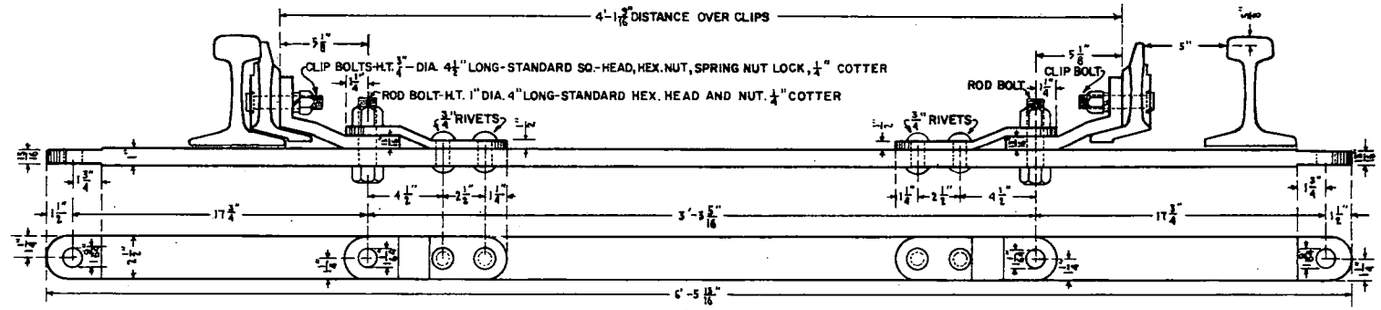
Recommended
Asst. Vice President Engineering

Approved
Vice President, Operations

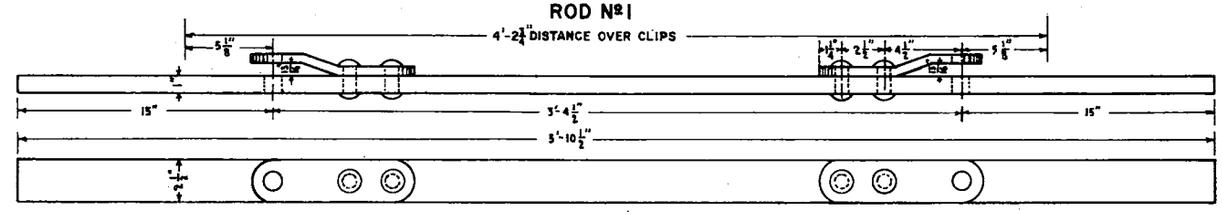
Revised 5-75, 10-81
THIS PLAN SUPERSEDES PLAN NO. C-1711.1

Dwg. № C-1711.2

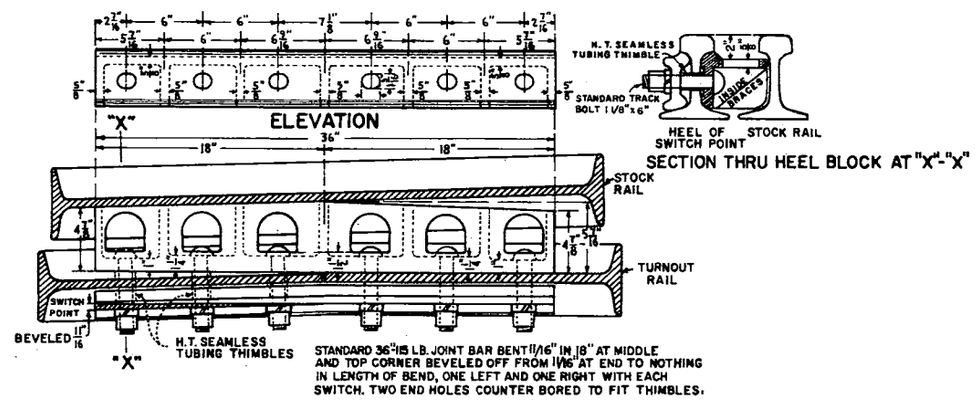
SHEET 1



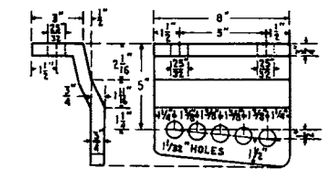
ROD Nº 1



ROD Nº 2



CAST STEEL HEEL BLOCK



ROD CLIPS

BURLINGTON NORTHERN INC.

STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 115 LB. R.E. RAIL

(SWITCH RODS AND HEEL BLOCKS)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

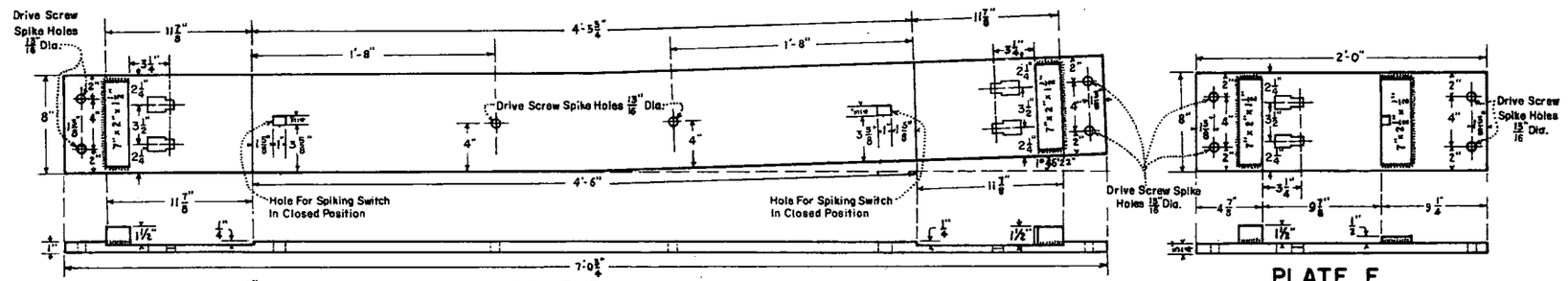
Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

THIS PLAN SUPERSEDES PLAN NO. C-1711.0

Dwg. Nº C-1711.1

SHEET 2



GAGE PLATE A *(NON INSULATED TYPE)*

PLATE E

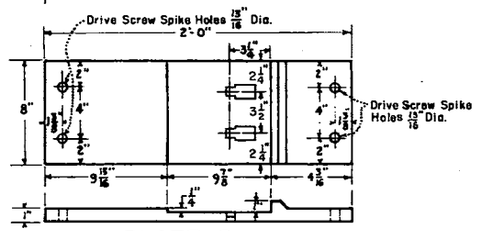


PLATE B

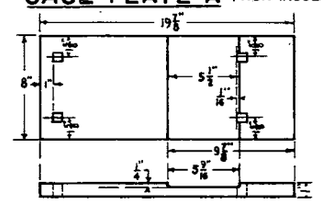


PLATE C

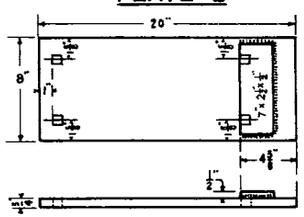


PLATE D

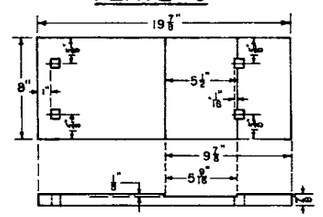
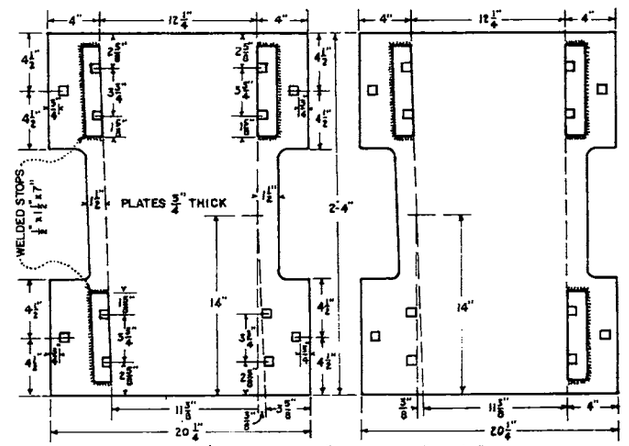


PLATE G



TWO TIE HEEL PLATE H

NOTE:

PLATES TO BE PUNCHED WITH 3/4" x 3/4" HOLES EXCEPT AS SHOWN. DRIVE SCREW SPIKE HOLES TO BE 13/16" DIA. ALL PLATES TO BE MARKED WITH NUMBER LETTERS AND WEIGHT OF RAIL, THUS - 16'-6" - A - 115 FURNISH 12 SECURITY ADJUSTABLE RAIL BRACES WITH EACH SWITCH.

46 DRIVE SCREW SPIKES 13/16" TO 3/4" DIA. TAPER SHANK x 6" LONG. TO BE FURNISHED WITH EACH SWITCH. BORE TIES IN FIELD FOR DRIVE SCREW SPIKES 1/2" HOLES IN SOFTWOOD TIES AND 9/16" HOLES IN HARDWOOD TIES. FURNISH 6, L-23, 6, LR-23, 8, L-27, 8, LR-27, 2, L-31, 2, LR-31 HOOK TWIN TIE PLATES PER A.R.E.A. PLAN 241-55.

BURLINGTON NORTHERN INC.

STANDARD PLAN

16 FT. 6 IN. STRAIGHT SWITCH 115 LB. R.E. RAIL

(GAGE PLATE AND TIE PLATES)

ENGINEERING DIVISION, ST. PAUL, MINN. MAY 1975

Recommended — Asst. Vice President Engineering

Approved — Vice President, Operations

Dwg. No. C-1711.1

THIS PLAN SUPERSEDES PLAN NO. C-1711.0

SHEET 3

No 9 C-2052 and No. 7 C-2057 Turnouts — 16'-6" - 115# R E. C-1711 - insulated (Knife Point)

16'6"
115#
Insulated

Switch Complete	LH Switch Layout Description	LH Switch Layout Stock Code No.	RH Switch Layout Description	RH Switch Layout Stock Code No.
	W/O Stock Rails	01-407-11808	W/O Stock Rails	01-407-11816
LH 39' Stock Rail	Bent	08-001-04000	Straight	08-001-04000
RH 39' Stock Rail	Straight	08-001-04000	Bent	08-001-04000
LH 16'6" Switch Point	Straight	01-407-11621	Straight	01-407-11621
RH 16'6" Switch Point	Straight	01-407-11648	Straight	01-407-11648
LH Two tie heel plate	LH Plate	01-407-09150	LH Plate	01-407-09169
RH Two tie heel plate	RH Plate	01-407-09177	RH Plate	01-407-09185

Plates

Plates, Hook Twin	No. 9 T. O.	No. 7 T.O.
LR-23	01-163-34707	01-163-34707
L - 23	01-163-33405	01-163-33405
LR-27	01-163-34803	01-163-34803
L - 27	01-163-33501	01-163-33501
LR-31	01-163-3490X	01-163-3490X
L-31	01-163-33608	01-163-33608

Plates

Description	Stock Code No.
Plate, Gage	01-407-09062
Plate A insulated	01-407-09062
Plate, Slide	
B Plate	01-407-09011
C "	01-407-09089
D "	01-407-09097
E "	01-407-09046
G "	01-407-09118

Material

Description	Stock Code No.
Bar, Joint Bent RH	01-407-00615
LH	01-407-00607
Bar, Insulated Complete	
3M	01-403-50408
Portec	01-403-50504
Block, Heel	01-407-00631
Brace, Rail Complete	01-129-09008
Clip, transit Type	
RH	01-407-09361
LH	01-407-09353
Rods Insulated	
Complete w/clip No. 1	01-407-09265
No 2	01-407-09273
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6"	01-319-79706
Thimble 2-3/8"	01-407-11939
2-5/8"	01-407-11947

Frogs - Guard Rail		Frog No. 9 Solid SG	Stock Code No	Frog No. 7 Solid SG	Stock Code No.
Rail, Guard 13'	Stock Code No.	W/Loose End Plates	01-411-09069	W/Loose End Plates	01-411-09173
		W/O Loose End Plates	01-411-09085	W/O Loose End Plates	01-411-09181
Complete w/plates	01-420-00700				

(G 87)

Dwg. Nº C-1711.0
SHEET 4

No. 9 C-2052 and No. 7 C-2057 Turnouts

16'6" - 115# R.E. C-1711 Non-Insulated (Knife Point)
1/2" Reinf.

16'6"
115#
Non-Insulated

	LH Switch Layout		RH Switch Layout	
	Description	Stock Code No.	Description	Stock Code No.
Switch Complete	W/O Stock Rails	01-407-11824	W/O Stock Rails	01-407-11859
LH 39' Stock Rail	Bent	08-001-04000	Straight	08-001-04000
RH 39' Stock Rail	Straight	08-001-04000	Bent	08-001-04000
LH 16'6" Switch Point	Straight	01-407-11621	Straight	01-407-11621
RH 16'-6" Switch Point	Straight	01-407-11648	Straight	01-407-11648
LH Two Tie Heel Plate	LH Plate	01-407-09150	LH Plate	01-407-09169
RH Two Tie Heel Plate	RH Plate	01-407-09177	RH Plate	01-407-09185

Plates

Plates, Hook Twin	No. 9 T. O.	No. 7 T. O.
LR-23	01-163-34707	01-163-34707
L-23	01-163-33405	01-163-33405
LR-27	01-163-34803	01-163-34803
L-27	01-163-33501	01-163-33501
LR-31	01-163-3490X	01-163-3490X
L-31	01-163-33608	01-163-33608

Plates

Description	Stock Code No.
Plate Gage	
Plate A Non-Insulated	01-407-09070
Plate, Slide	
B Plate	01-407-09011
C Plate	01-407-09089
D Plate	01-407-09097
E Plate	01-407-09046
G Plate	01-407-09118

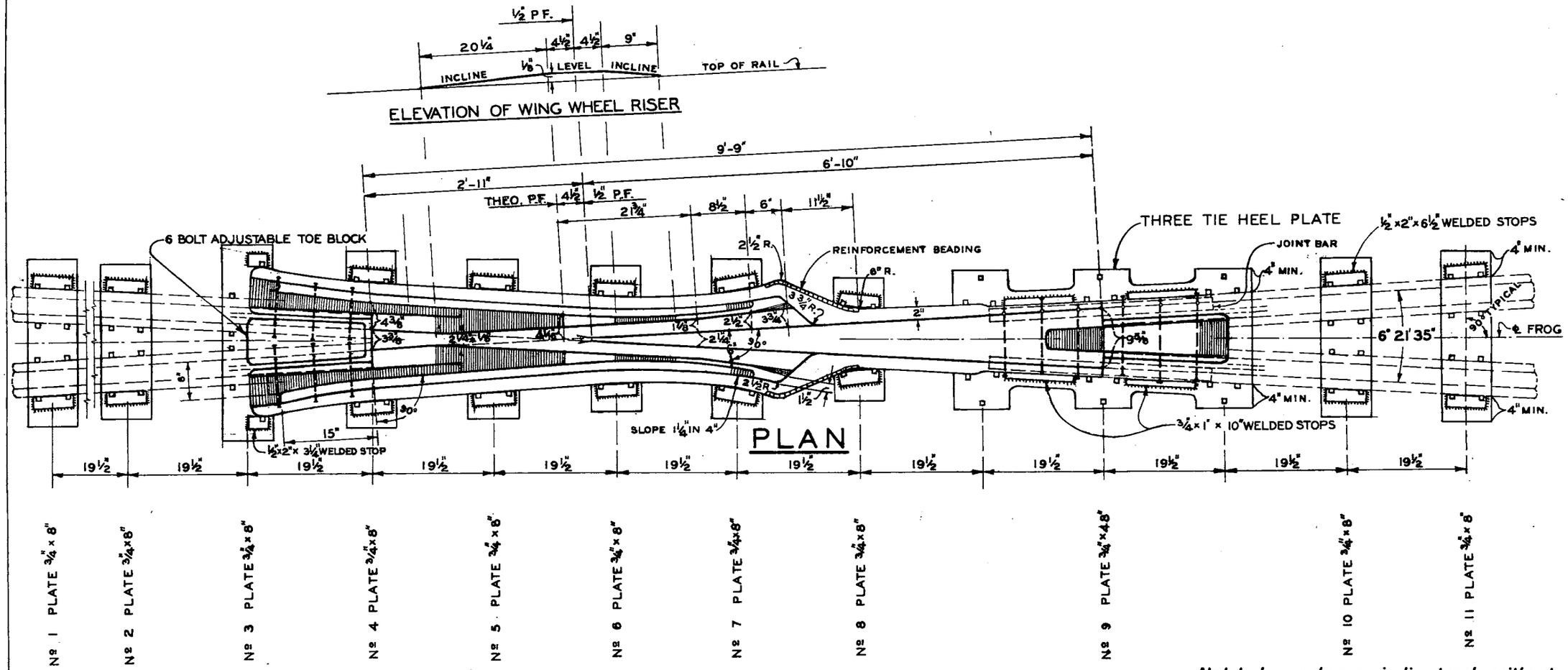
Material

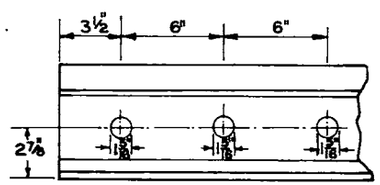
Description	Stock Code No.
Bar Joint Bent RH	01-407-00615
LH	01-407-00607
Bar, Insulated Complete	01-129-09008
3M	01-403-50408
Portec	01-403-50504
Block, Heel	01-407-00631
Brace, Rail Complete	01-129-09008
Clip, Transit Type	
RH	01-407-09361
LH	01-407-09353
Rods, Non-Insulated	
Complete W/Clip No.1	01-407-09310
No. 2	01-407-09329
Spike, Timber Drive	
3/4" x 6"	01-319-87001
Spike, Timber Screw	
3/4" x 6	01-319-79706
Thimble 2-3/8"	01-407-11939
2-5/8	01-407-11947

Frogs - guard Rail		Frog No. 9 Solid SG	Stock Code No.	Frog No. 7 Solid SG	Stock Code No.
Rail, Guard 13' Complete W/Plates	Stock Code No. 01-420-00700	W/Loose End Plates	01-411-09069	W/Loose End Plates	01-411-09173
		W/O Loose End Plates	01-411-09085	W/O Loose End Plates	01-411-09181

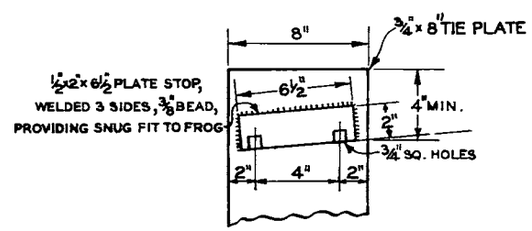
Dwg. Nº C-1711.0
SHEET 5

(G 87)





RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1 FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 641-55 EXCEPT AS SHOWN.

2. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-115), (9-2-115), (9-3-115) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.

3. THE THREE TIE HEEL PLATE TO BE ¾" THICK WITH ¾"×1"×10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 9 SELF-GUARDED SOLID MANGANESE FROG

115 LB. R.E. RAIL

ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1970

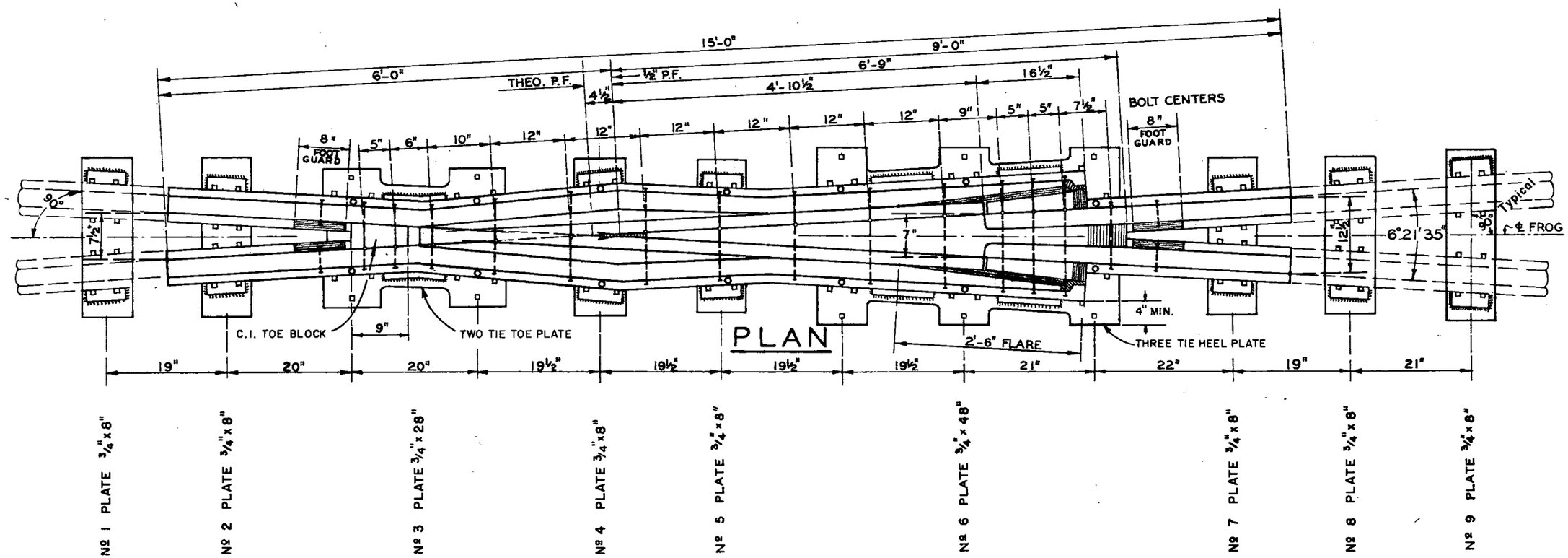
Asst. Vice President Engineering

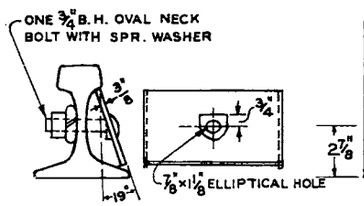
Vice President, Operations

Dwg. Nº C-1800.3

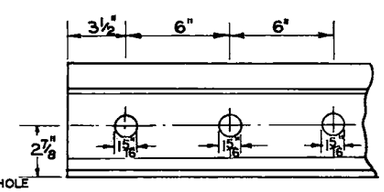
Revised 6-73, 6-78, 10-80

THIS PLAN SUPERSEDES PLAN NO. C-1800.2

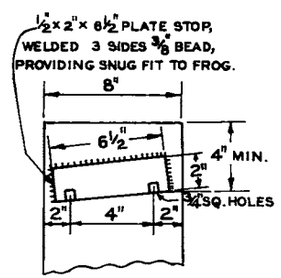




METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-115), (9-2-115) ETC. PLATES NUMBERED 3 THRU 6 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" × 1" × 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 RAIL BOUND MANGANESE FROG
115 LB. R.E. RAIL

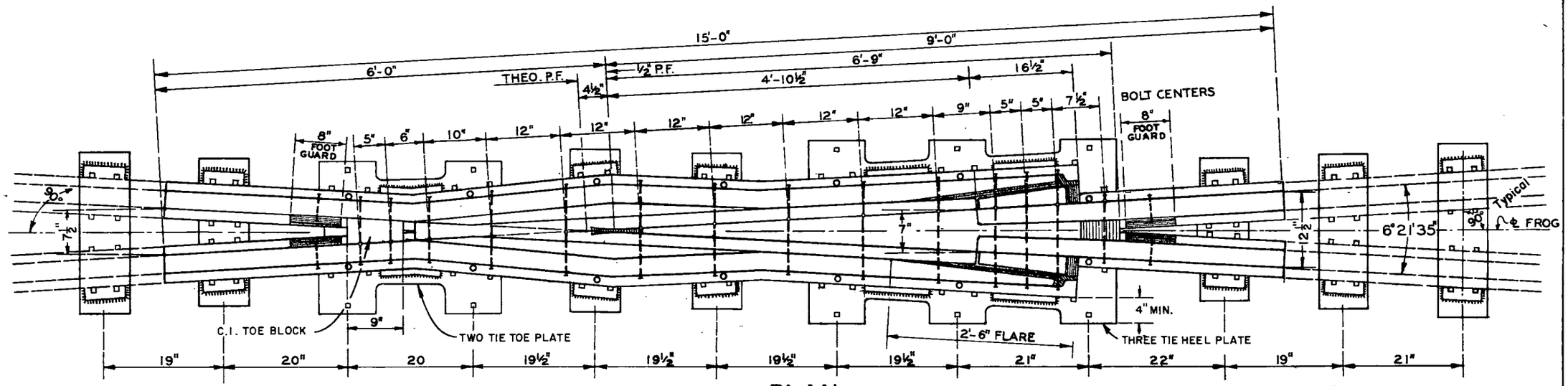
ENGINEERING DIVISION, ST. PAUL, MINN. JULY 1970

Recommended
Asst. Vice President Engineering

Approved
Vice President Operations

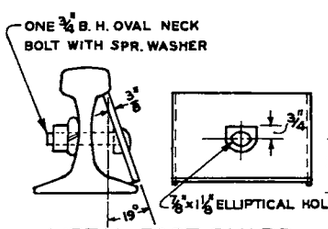
Dwg. Nº C-1801.4

Revised 1-71, 10-76, 6-78, 10-80
This plan supersedes plan Nº C-1801.3

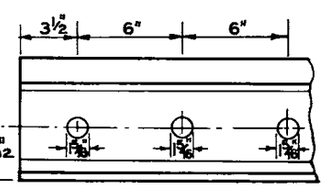


PLAN

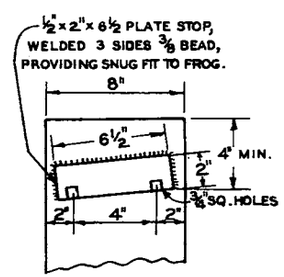
Nº 1	Nº 2	Nº 3	Nº 4	Nº 5	Nº 6	Nº 7	Nº 8	Nº 9
PLATE ¾" x 8"	PLATE ¾" x 8"	PLATE ¾" x 28"	PLATE ¾" x 8"	PLATE ¾" x 8"	PLATE ¾" x 48"	PLATE ¾" x 8"	PLATE ¾" x 8"	PLATE ¾" x 8"



METAL FOOT GUARD



RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-132), (9-2-132) ETC. PLATES NUMBERED 3 THRU 6 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO. 600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 RAIL BOUND MANGANESE FROG
132 LB. R.E. RAIL

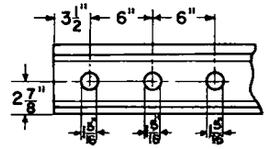
ENGINEERING DIVISION. ST. PAUL, MINN. JULY 1970

Recommended: B. H. Jacobson, Asst. Vice President Engineering

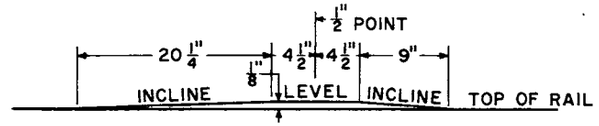
Approved: W. M. Hoxsey, Vice President Operations

Dwg. Nº C-1802.4

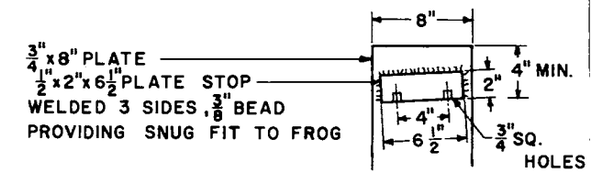
Revised 1-71, 10-76, 6-78, 10-80
This plan supesedes plan Nº C-1802.3



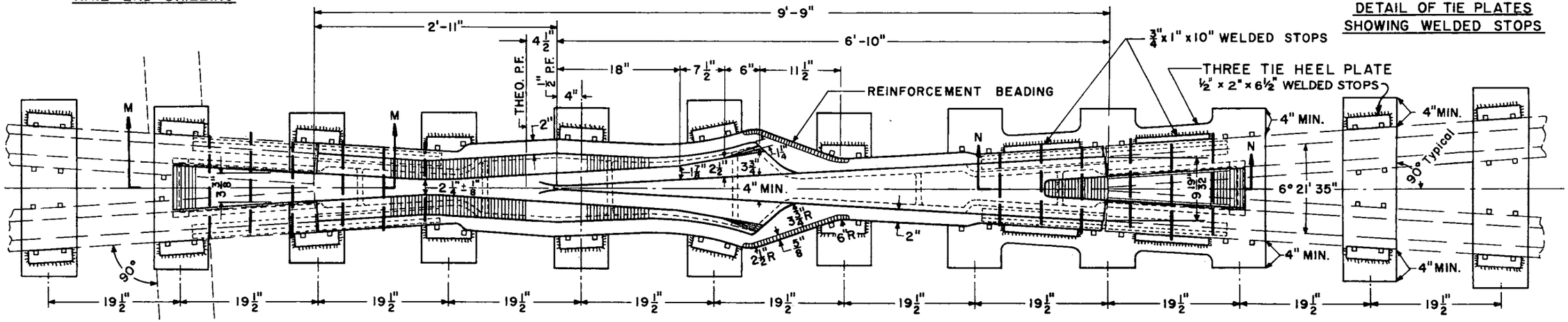
RAIL END DRILLING



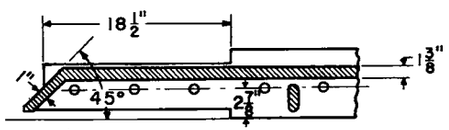
ELEVATION OF WING WHEEL RISER



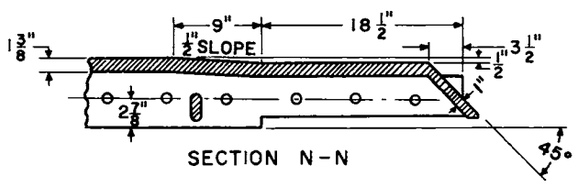
DETAIL OF TIE PLATES
SHOWING WELDED STOPS



Nº 1 PLATE 3/4" x 8"
Nº 2 PLATE 3/4" x 8"
Nº 3 PLATE 3/4" x 8"
Nº 4 PLATE 3/4" x 8"
Nº 5 PLATE 3/4" x 8"
Nº 6 PLATE 3/4" x 8"
Nº 7 PLATE 3/4" x 8"
Nº 8 PLATE 3/4" x 48"
Nº 9 PLATE 3/4" x 8"
Nº 10 PLATE 3/4" x 8"



SECTION M-M



SECTION N-N

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 671-55 EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS: (9-1-115), (9-2-115), (9-3-115) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.
3. THE THREE TIE HEEL PLATE TO BE 3/4" THICK WITH 3/4" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE 3/4" SQUARE.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 9 SOLID MANGANESE STEEL FROG

115 LB. R.E. RAIL

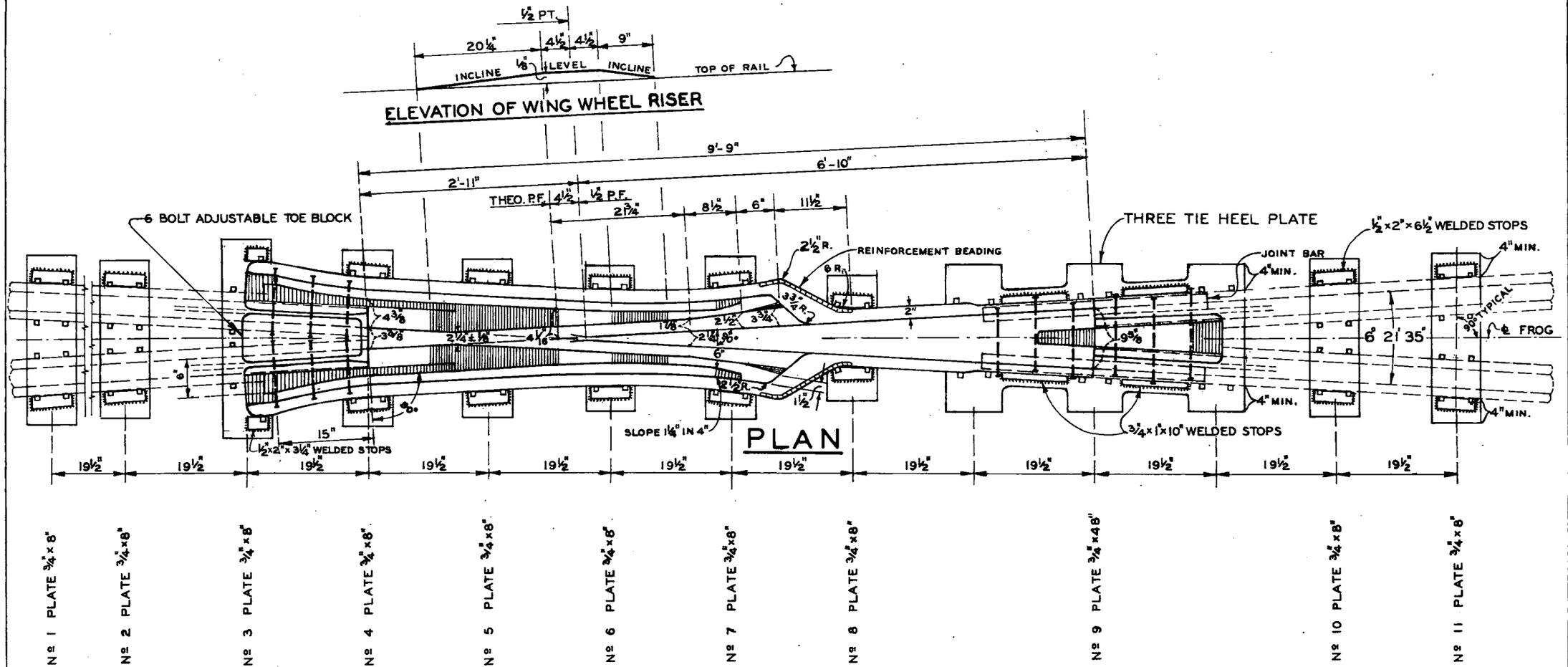
ENGINEERING DIVISION, ST. PAUL, MINN. JULY, 1970

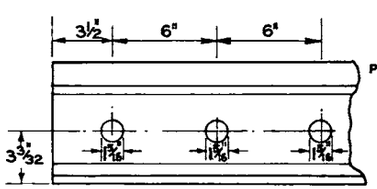
Recommended: R. H. Anderson — Asst. Vice President Engineering

Approved: W. M. Bornstrom — Vice President, Operations

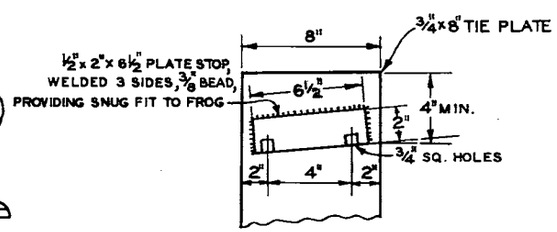
Dwg. Nº C-1803.3

Revised 6-73, 6-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1803.2





RAIL END DRILLING



DETAIL OF TIE PLATES
SHOWING WELDED STOPS

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 641-55 EXCEPT AS SHOWN.
2. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (9-1-132), (9-2-132), (9-3-132) ETC. FOR SHIPMENT, PLATES SHALL BE BANDED TOGETHER SEPARATELY FROM FROG.
3. THE THREE TIE HEEL PLATE TO BE ¾" THICK WITH ¾"×1"×10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.

Not to be used on main line tracks without approval of Asst. Vice President Engineering

BURLINGTON NORTHERN INC.

STANDARD PLAN

NO. 9 SELF-GUARDED SOLID MANGANESE FROG 132 LB. R.E. RAIL

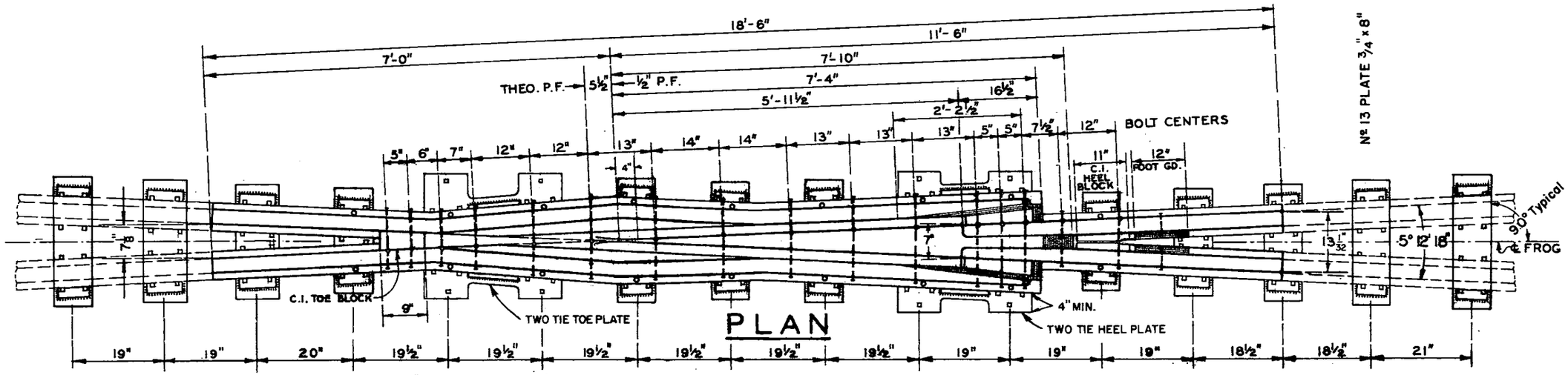
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE 1970

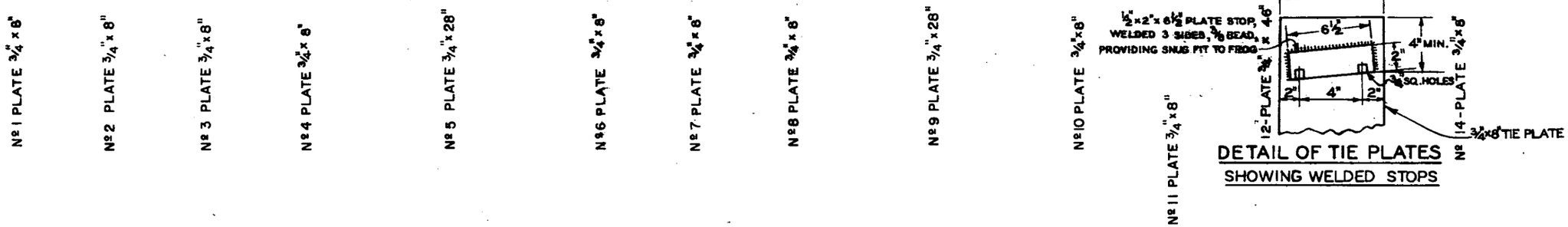
B. G. Anderson
Asst. Vice President Engineering

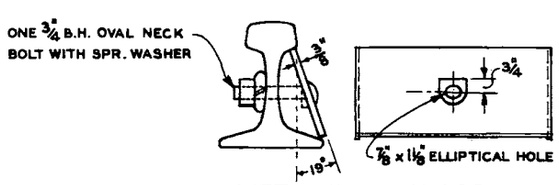
W. M. Rossiter, Jr.
Vice President Operations

Dwg. № C-1804.3

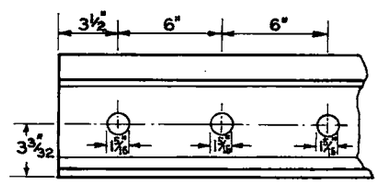
Revised 6-73, 6-78, 10-80
THIS PLAN SUPERSEDES PLAN NO. C-1804.2







METAL FOOT GUARD



RAIL END DRILLING

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOWN.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS (11-1-132), (11-2-132) ETC. PLATES NUMBERED 4 THRU 10 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A PLAN NO.600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 11 RAIL BOUND MANGANESE FROG
132 LB. R.E. RAIL

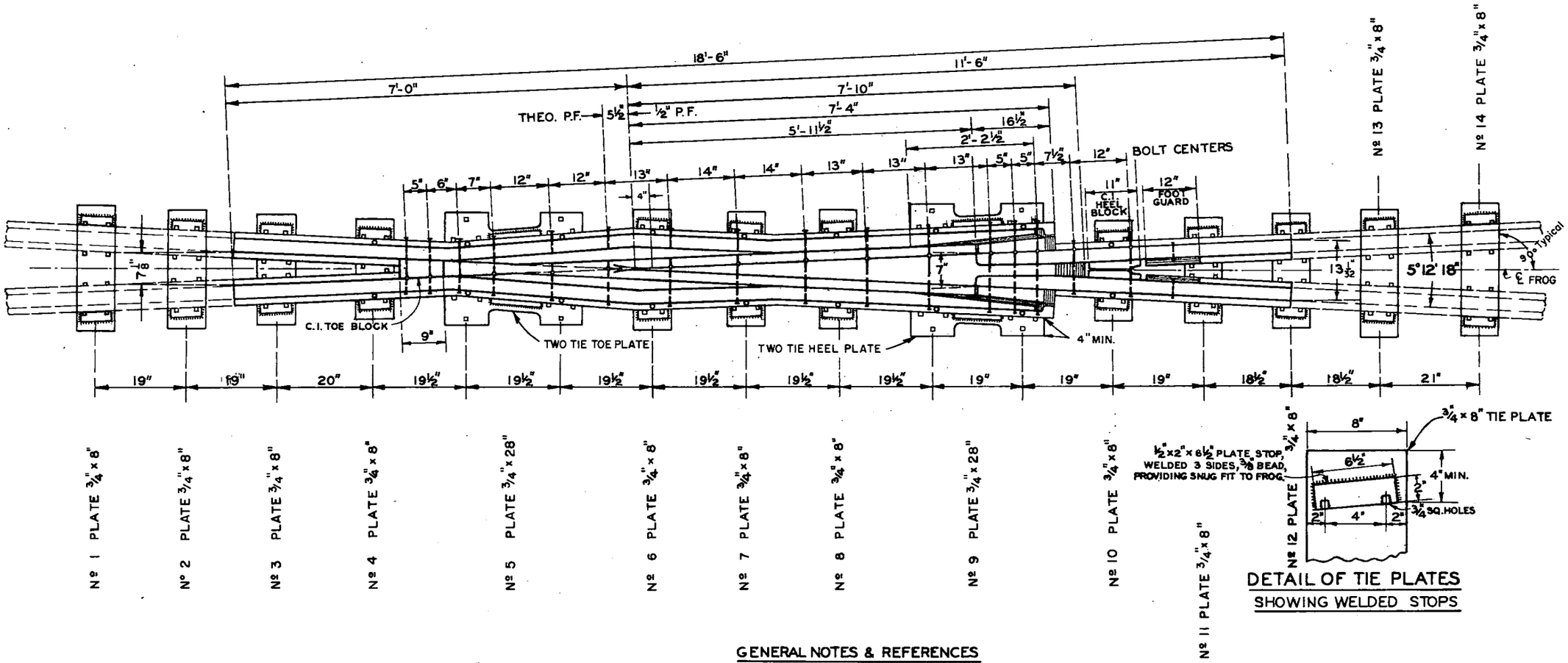
ENGINEERING DIVISION, ST. PAUL, MINN. JUNE, 1970

Recommended: B. H. Anderson, Asst. Vice President Engineering

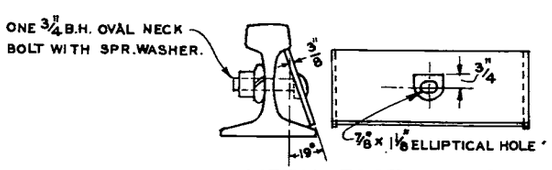
Approved: W. M. Hamilton, Vice President Operations

Dwg. Nº C-1805.5

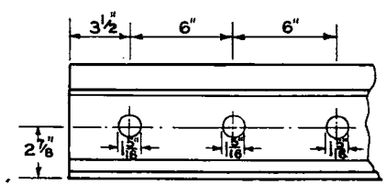
Revised 1-71, 6-73, 10-76, 6-78, 10-80
This plan supersedes plan Nº C-1805.4



DETAIL OF TIE PLATES
SHOWING WELDED STOPS



METAL FOOT GUARD



RAIL END DRILLING

GENERAL NOTES & REFERENCES

1. FROG SHALL BE CONSTRUCTED PER A.R.E.A. PLAN 621-55 AND 623-55 EXCEPT AS SHOW.
2. FROG SHALL BE DEPTH HARDENED, CASTING FAILING TO MEET THE HARDNESS REQUIREMENT WILL NOT BE ACCEPTABLE.
3. PLATES TO BE STAMPED WITH FROG NUMBER, RESPECTIVE PLATE NUMBER AND WEIGHT OF RAIL THUS(11-1-115),(11-2-115)ETC. PLATES NUMBERED 4 THRU 10 SHALL BE SECURED TO FROG USING ¾" RIVETS OR ⅝" "HUCK" FASTENINGS. ALL LOOSE PLATES SHALL BE BANDED TOGETHER FOR SHIPMENT.
4. THE MULTIPLE TOE AND HEEL PLATES TO BE ¾" THICK WITH ¾" x 1" x 10" STOPS WELDED TO PLATE TO PROVIDE A SNUG FIT TO FROG. SPIKE HOLES TO BE ¾" SQUARE.
5. OMIT WING WHEEL RISERS AND POINT CROWN. DEPRESS POINT PER A.R.E.A. PLAN NO.600B.

BURLINGTON NORTHERN INC.
STANDARD PLAN

NO. 11 RAIL BOUND MANGANESE FROG
115 LB. R.E. RAIL

ENGINEERING DIVISION. ST. PAUL, MINN. JUNE, 1970

Recommended: B. H. Anderson, Asst. Vice President Engineering

Approved: W. W. Bowman, Vice President Operations

Dwg. Nº C-1806.5

Revised 1-71, 6-73, 10-76, 6-78, 10-80
This plan supersedes plan Nº C-1806.4