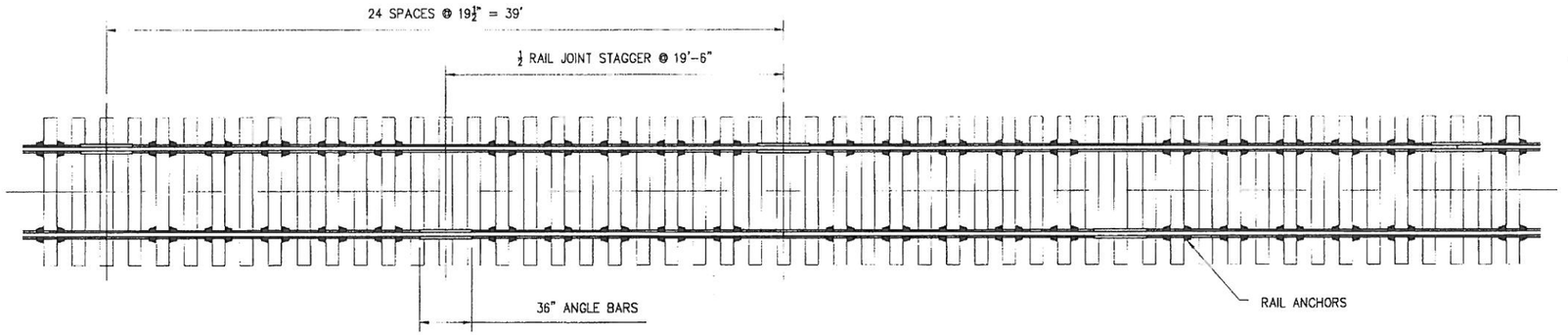
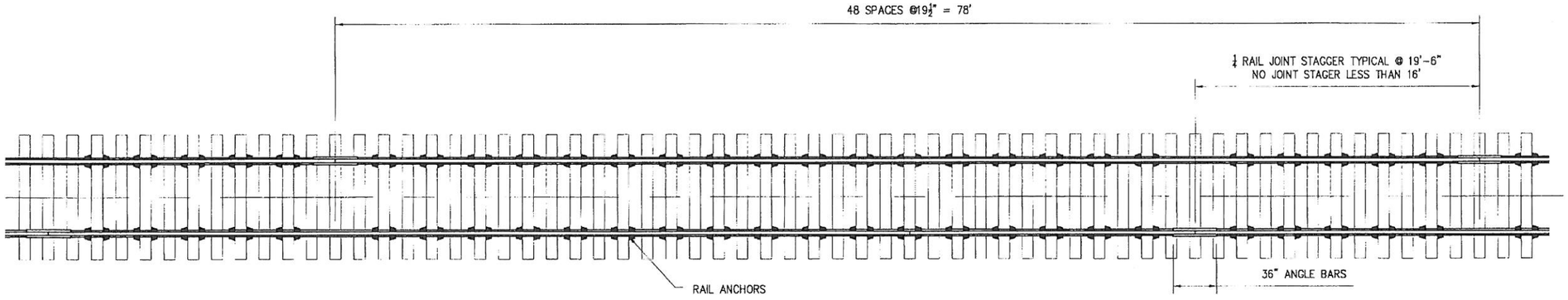


39' JOINTED RAIL

FOR 39' JOINTED RAILS IN MAIN LINE TRACK, 24 TIES AND 40 RAIL ANCHORS PER RAIL, 3250 TIES, 5416 RAIL ANCHORS, 272 PAIRS OF ANGLE BARS, AND 1632 ANGLE BAR BOLTS, NUTS AND WASHERS PER MILE



78' JOINTED RAIL

FOR 78' JOINTED RAILS IN MAIN LINE TRACK, 48 TIES AND 88 RAIL ANCHORS PER RAIL, 3250 TIES, 5956 RAIL ANCHORS, 136 PAIRS OF ANGLE BARS, AND 816 ANGLE BAR BOLTS, NUTS AND WASHERS PER MILE

NOTES

1. FOR JOINTED RAILS IN MAIN LINE TRACK, BOX ANCHOR EVERY OTHER TIE EXCEPT TIES UNDER JOINT BARS WHERE NO ANCHORS ARE APPLIED.
2. LONGITUNAL RAIL MOVEMENT MUST BE EFFECTIVELY CONTROLLED.
3. ANCHORS SHALL BE APPLIED FROM THE GAUGE SIDE OF RAIL WHERE POSSIBLE.
4. BOX ANCHOR 184 TIES EACH DIRECTION FROM FIXED OBJECTS IE. TURNOUTS, ROAD CROSSINGS AND FIXED BRIDGES.

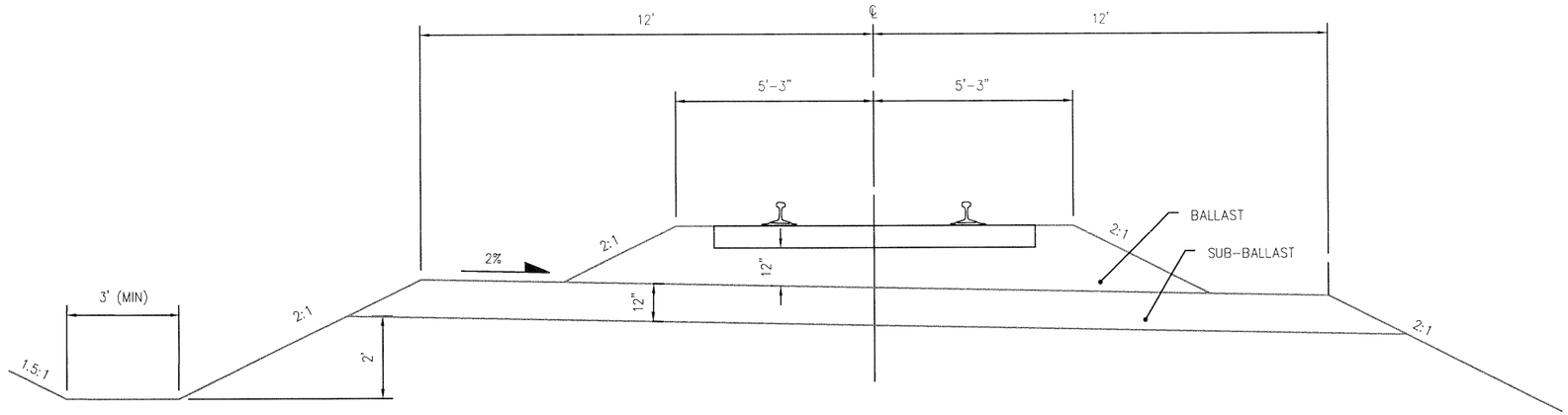
STATE OF ALASKA
49TH
T. Brooks
Thomas E. Brooks
NO. CE-5088
PROFESSIONAL ENGINEER

ALASKA RAILROAD CORPORATION
OFFICE OF THE CHIEF ENGINEER
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500 (907) 265-2456

STANDARD
MAIN TRACK CONSTRUCTION
WOOD TIE SPACING AND RAIL ANCHORING
FOR 39' AND 78' RAIL LENGTHS

APPROVED: T. Brooks DATE: 12/29/03

DESIGNED BY: REH	SCALE: 1" = 100'		FILE: s1.22-03.dwg
DRAWN BY: BBF			1.22-03
APPROVED BY: TEB	DATE: 12/29/2003		



TANGENT SECTION

SCALE: 1" = 4'

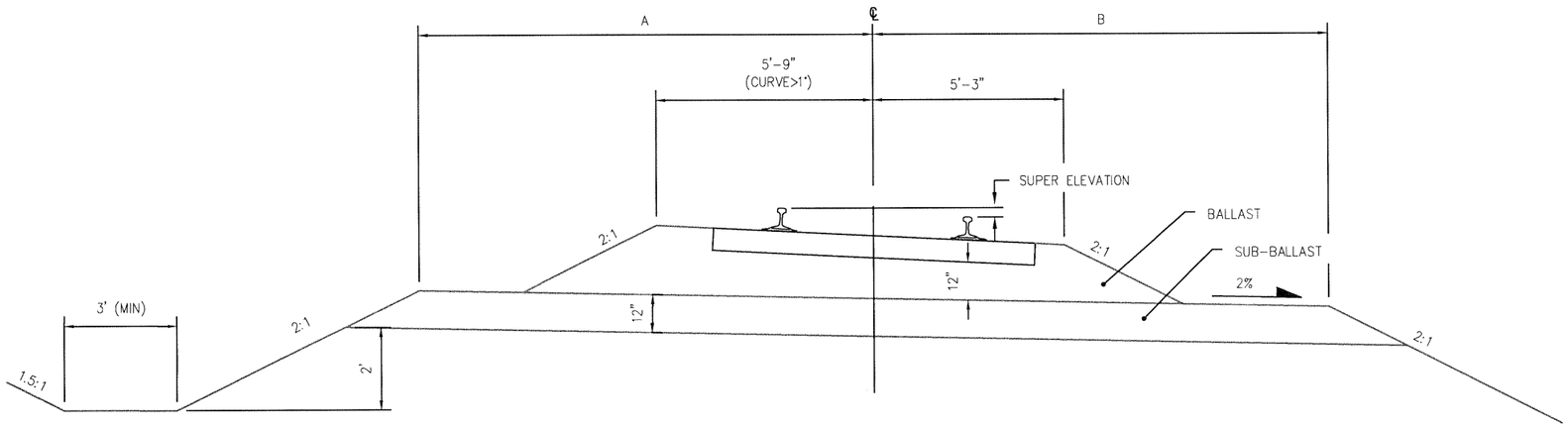
BALLAST REQUIRED FOR 100' OF TRACK		
CURVED TRACK	SUPER ELEVATION	CUBIC YARDS
	1"	75.1
	2"	77.0
	3"	80.1
	4"	83.4
	5"	86.8
TANGENT TRACK		75.0

SUB-BALLAST REQUIRED FOR 100' OF TRACK		
CURVED TRACK	DEGREE OF CURVE	CUBIC YARDS
	0 - 1 °	96.3
	1 - 2 °	98.2
	2 - 6 °	100.0
	+6°	101.9
TANGENT TRACK		96.3

SUB-BALLAST WIDTH FOR DEGREE CURVATURE		
	DIMENSIONS	
	A	B
0° - 1 0' INCLUSIVE	12'-0"	12'-0"
1 °1' - 2 0° INCLUSIVE	12'-6"	12'-0"
2 °1' - 6 0° INCLUSIVE	13'-0"	12'-0"
OVER 6 °	13'-6"	12'-0"

NOTES

1. BALLAST DEPTH SHALL BE MINIMUM 12" UNDER TIE, MEASURED AT LOW RAIL.
2. ALL QUANTITIES ESTIMATED, REPRESENT IN-PLACE, COMPACTED MATERIAL, BASED ON 3,250 TIES PER MILE AND MINIMUM BALLAST AND SUB-BALLAST DIMENSIONS.
3. SUB GRADE SHALL SLOPE TO PREVAILING DRAINAGE SIDE ON TANGENT, OR TO THE INSIDE OF THE CURVE.
4. SUBGRADE SLOPE TRANSITION RATE TO BE 1" IN 10'.



CURVE SECTION

SCALE: 1" = 4'

STATE OF ALASKA
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Thomas E. Brooks
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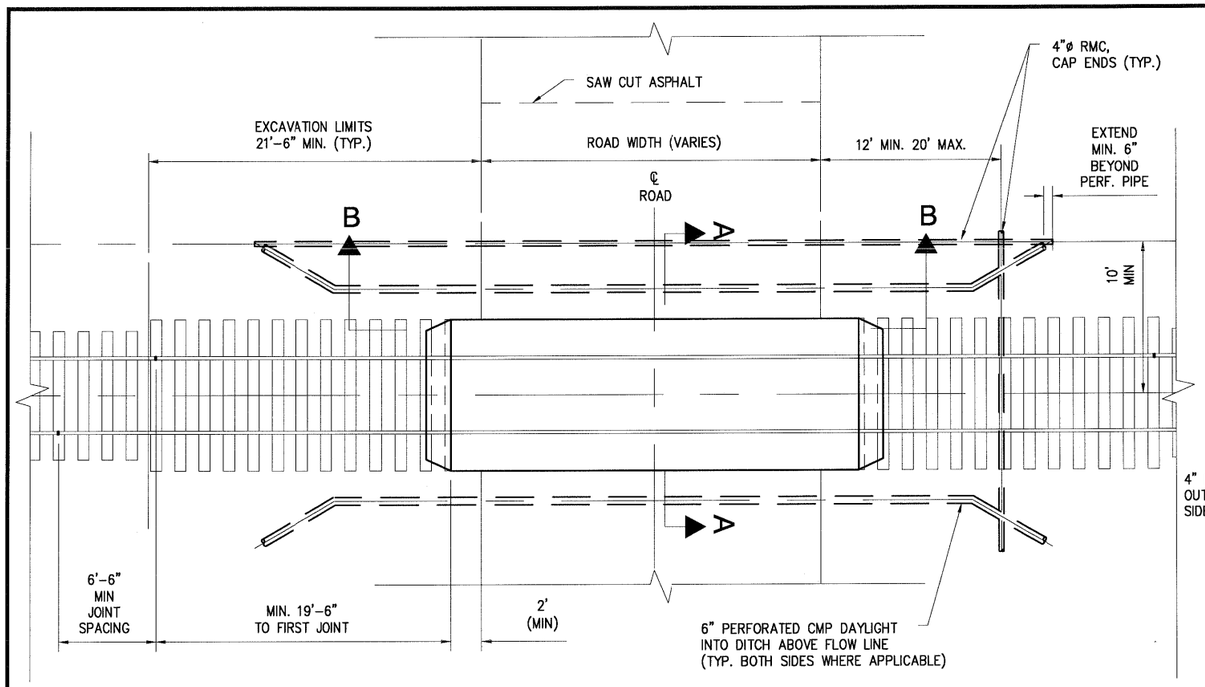
STANDARD
MAIN LINE
BALLAST SECTIONS

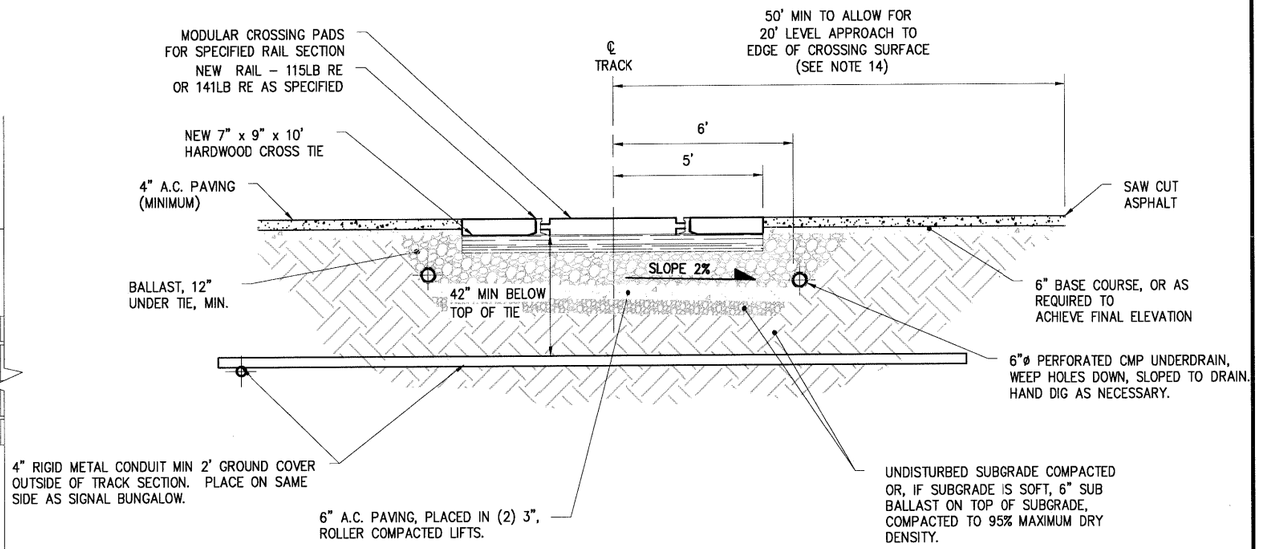
APPROVED: T. Brooks DATE: 12/29/03

DESIGNED BY: REH
DRAWN BY: BBF
APPROVED BY: TEB
SCALE: 1" = 4'
DATE: 12/29/2003
FILE: s2.21-03.dwg
2.21-03



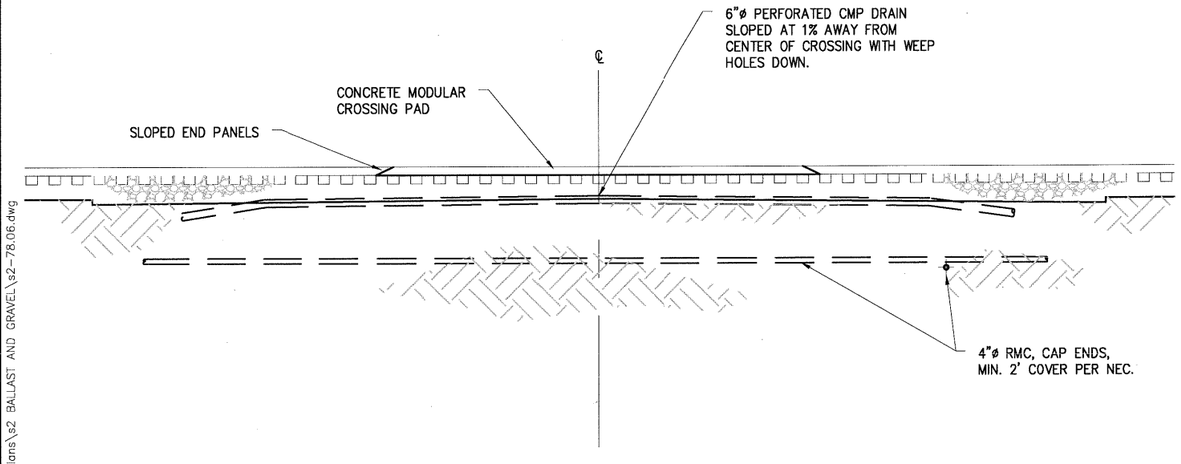
PLAN

SCALE: 1:10'



SECTION A-A

SCALE: 1:5'



SECTION B-B

SCALE: 1:10'

GENERAL NOTES

1. PROVIDE NEW 7"x9"x10' HARDWOOD CROSS TIES WITH PANDROL PLATES AND E-CLIPS ON 19-1/2" CENTER-TO-CENTER (OR PER MODULAR CROSSING MANUFACTURER'S RECOMMENDATION) THROUGH CROSSING AND 12 TIES BEYOND CROSSING IN BOTH DIRECTIONS.
2. MODULAR CROSSING PADS SHALL BE 8.125' LONG AND MANUFACTURED FROM CONCRETE SPECIFICALLY DESIGNED FOR RAILROAD CROSSING APPLICATIONS. THE PARTICULAR MANUFACTURER SHALL BE REGULARLY ENGAGED IN THE FABRICATION OF RAILROAD CROSSING MATERIALS AND APPROVED BY THE CHIEF ENGINEER.
3. CROSSING PADS LOCATED WITHIN 3° OR GREATER CURVES SHALL BE DESIGNED FOR THE SPECIFIC APPLICATION.
4. ALL MODULAR CROSSING PADS, HARDWARE, AND INSTALLATION PROCEDURES SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND FOR THE RAIL SIZE USED.
5. ALL RAIL JOINTS MUST BE WELDED THROUGHOUT THE CROSSING. NO JOINTS ALLOWED WITHIN 19.5' OF THE CROSSING PANEL, WITH JOINTS STAGGERED MIN. 6.5'. WELDING KITS AND WELDER PROVIDED BY THE CONTRACTOR MUST BE APPROVED BY THE CHIEF ENGINEER. ALL WELDS IN CROSSING SHALL BE GROUND FLUSH SO AS NOT TO INTERFERE WITH FLANGE FILLER.
6. THE INNER 2 HOLES SHALL BE DRILLED ON NEW RAIL, AND CONNECTED TO EXISTING RAIL WITH NEW 36" ANGLE BARS AND BOLTS.
7. TO MINIMIZE SETTLEMENT, KEEP EXCAVATION FOR UNDER DRAIN AND CONDUITS TO A MINIMUM. COMPACT BACKFILL IN LIFTS NOT EXCEEDING 6" TO 95% OF MAXIMUM DRY DENSITY.
8. IT WILL BE NECESSARY IN MOST CASES TO RAISE THE TRACK THROUGH THE CROSSING TO MATCH FINAL TRACK DESIGN GRADE. FINAL TRACK DESIGN GRADE SHALL BE APPROVED BY THE CHIEF ENGINEER. RUNOFF OF TRACK RAISE SHALL BE NO GREATER THAN 1/4" PER 62 FEET.
9. MINIMUM OF THREE DAYS OF RAIL TRAFFIC REQUIRED OVER NEWLY CONSTRUCTED TRACK PRIOR TO FINAL SURFACING OF THE TRACK.
10. FINAL INSTALLATION OF MODULAR CROSSING PADS CANNOT BEGIN UNTIL FINAL SURFACING OF THE TRACK IS COMPLETED.
11. DRAINAGE FROM ROAD SURFACE SHALL NOT DRAIN TOWARD CROSSING.
12. BOX ANCHOR EVERY TIE FOR 184 TIES BEYOND CROSSING PADS IN BOTH DIRECTIONS. PANDROL PLATES COUNT AS BOX ANCHORS.
13. EXTEND ROAD SURFACE LEVEL WITH CROSSING SURFACE A MINIMUM OF 20' BEYOND EDGE OF CROSSING.
14. FOR A TRACK ELEVATION CHANGE OF 3" OR LESS, SAW CUT AND REMOVE PAVEMENT A MINIMUM OF 50 FT FROM THE CENTERLINE. FOR EVERY 1" OF RAISE GREATER THAN 3", CUT THE ASPHALT BACK AN ADDITIONAL 10 FT.

STATE OF ALASKA
49 TH
Thomas E. Brooks
NO. CE-5088
PROFESSIONAL ENGINEER

BEFORE YOU DIG
CALL FOR FREE
UNDERGROUND
LOCATION

Locate Call Center of Alaska
Anchorage Area.....278-3121
Statewide.....800-478-3121
who will notify subscribed utilities only.
Other utilities need to be contacted individually.

ALASKA RAILROAD CORPORATION
OFFICE OF THE CHIEF ENGINEER
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STANDARD

MODULAR CROSSING

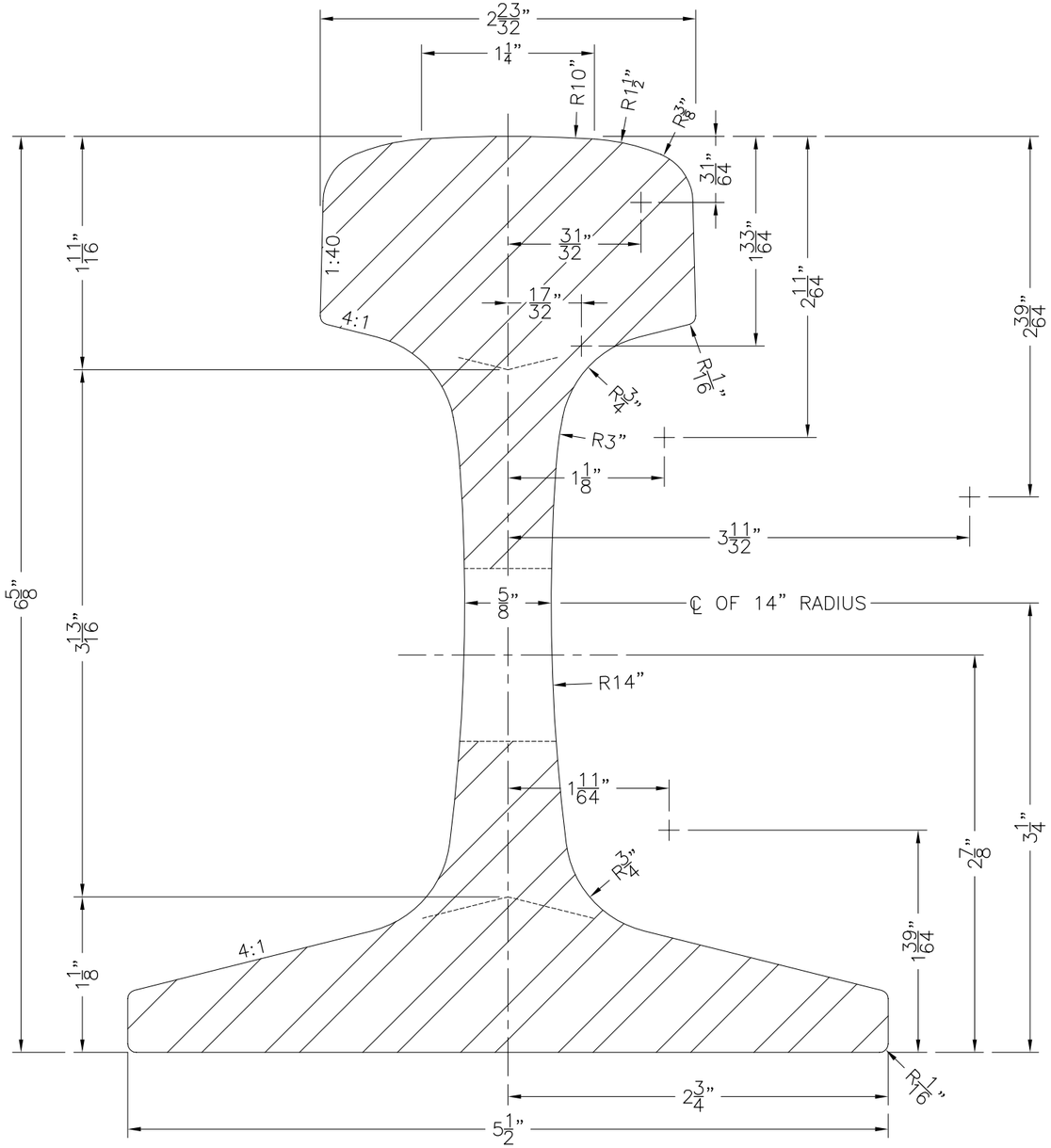
APPROVED: DATE:

DESIGNED BY: JLS			FILE: s2-78.06.dwg
DRAWN BY: BBF	SCALE: AS NOTED		2.78-06
CHECKED BY: JLS			
APPROVED BY: TEB	DATE: 9/18/2006		

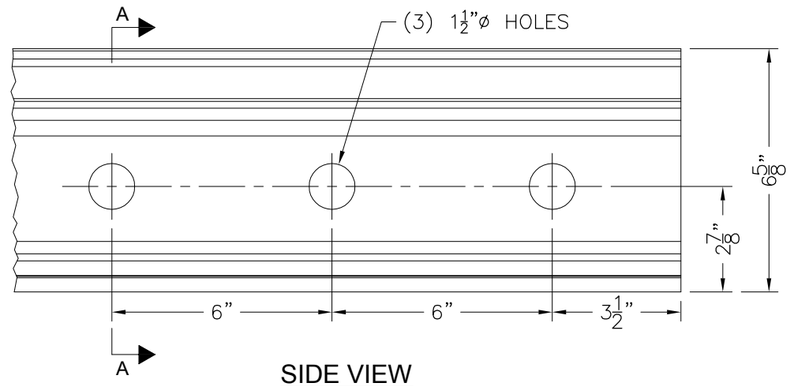
C:\ACAD\ARRStandards\Standard Plans\s2 BALLAST AND GRAVEL\s2-78.06.dwg

MATHEMATICAL PROPERTIES

AREA: HEAD 3.91 SQ. IN.	= 34.8%
WEB 3.05 SQ. IN.	= 27.1%
BASE 4.29 SQ. IN.	= 38.1%
TOTAL 11.25 SQ. IN.	= 100.0%
WEIGHT PER YARD	= 114.7 LBS.
MOMENT OF INERTIA	= 65.6
SECTION MODULUS, HEAD	= 18.0
SECTION MODULUS, BASE	= 22.0
RATIO, M.I. TO AREA	= 5.83:1
RATIO, S.M. TO AREA	= 1.6:1
RATIO, HEIGHT TO BASE	= 1.2:1



SECTION A-A
FULL SIZE



SIDE VIEW
SCALE: 3" = 1'-0"

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STANDARD
115 LB. RE
RAIL SECTION

APPROVED: DATE:

DESIGNED BY:			FILE: s3-1.dwg
DRAWN BY:	BBF	SCALE: AS NOTED	3.1
APPROVED BY:	ENG DEPT	DATE: 5/02	