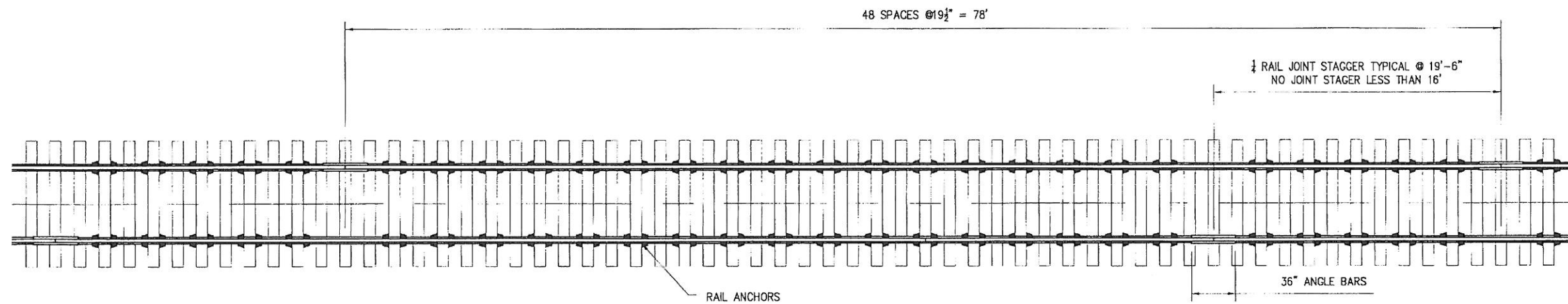


**39' JOINTED RAIL**

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

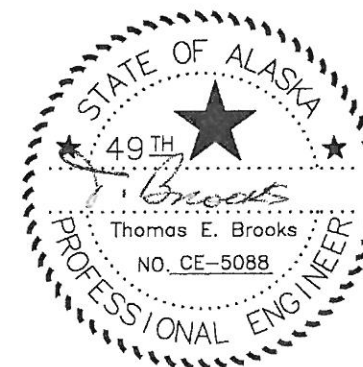


**78' JOINTED RAIL**

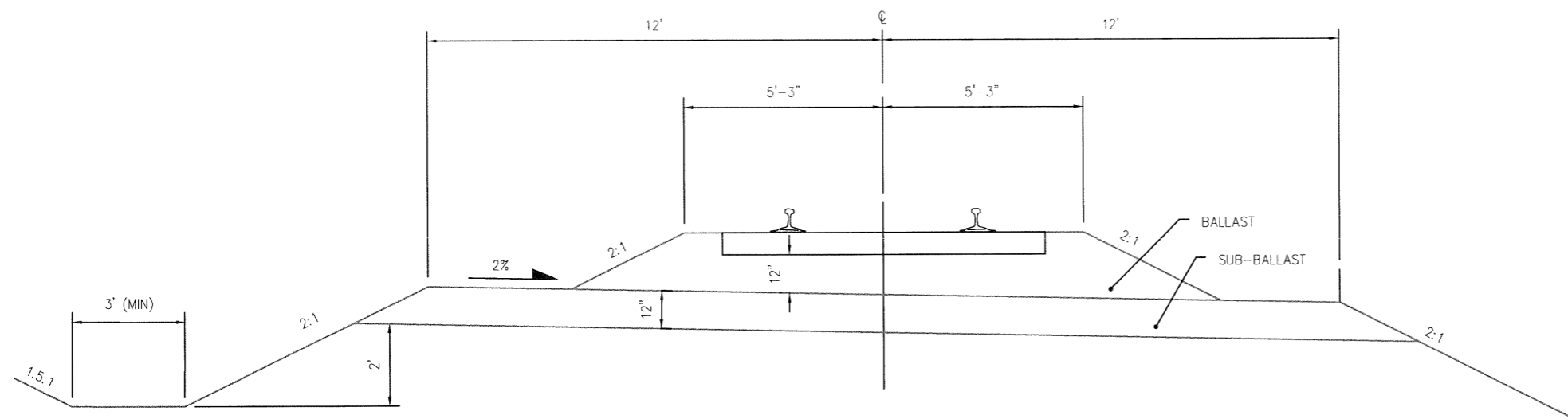
FOR 78' JOINTED RAILS IN MAIN LINE TRACK, 48 TIES AND 88 RAIL ANCHORS PER RAIL, 3250 TIES, 5956 RAIL ANCHORS, 136 PAIRS OF ANGLE BARS, AND 816 ANGLE BAR BOLTS, NUTS AND WASHERS PER MILE

**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.

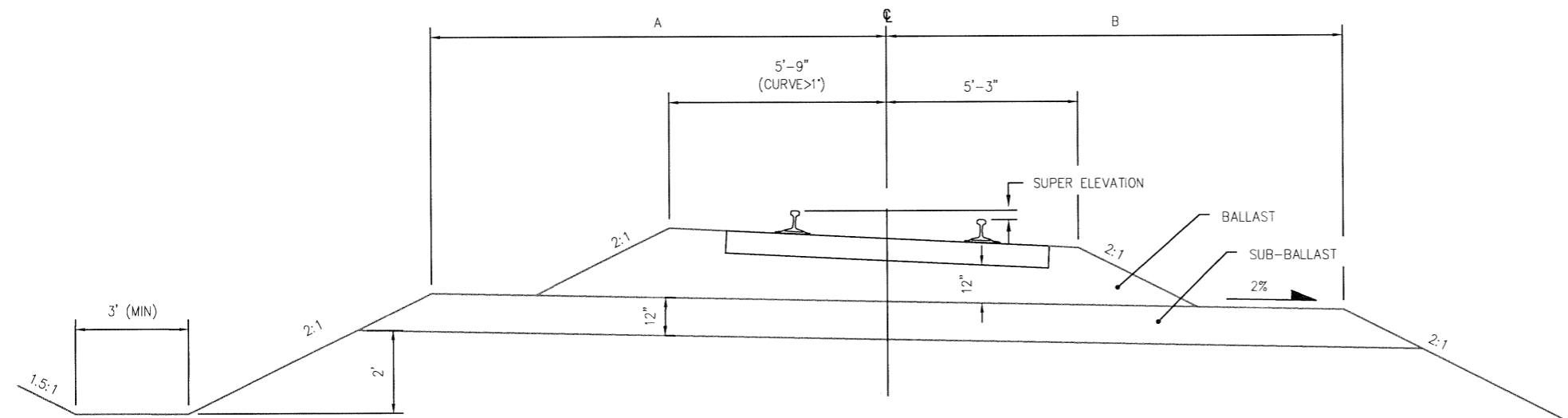


<b>ALASKA RAILROAD CORPORATION</b> OFFICE OF THE CHIEF ENGINEER P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500 (907) 285-2456		
STANDARD <b>MAIN TRACK CONSTRUCTION</b> <b>WOOD TIE SPACING AND RAIL ANCHORING</b> <b>FOR 39' AND 78' RAIL LENGTHS</b>		
DESIGNED BY: REH DRAWN BY: BBF APPROVED BY: IEB	SCALE: 1" = 100' DATE: 12/29/2003	FILE: #1.22-03.dwg <b>1.22-03</b>



**TANGENT SECTION**

SCALE: 1" = 4'



**CURVE SECTION**

SCALE: 1" = 4'

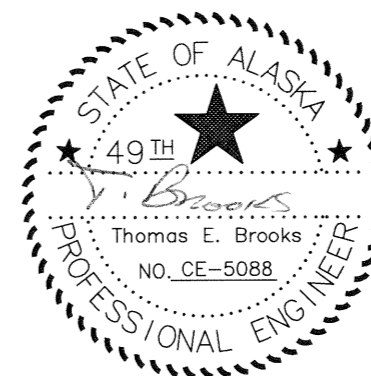
BALLAST REQUIRED FOR 100' OF TRACK		
CURVED TRACK	SUPER ELEVATION	CUBIC YARDS
	1"	
2"		77.0
3"		80.1
4"		83.4
5"		86.8
TANGENT TRACK		75.0

SUB-BALLAST REQUIRED FOR 100' OF TRACK		
CURVED TRACK	DEGREE OF CURVE	CUBIC YARDS
	0 - 1°	
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° INCLUSIVE	12'-0"	12'-0"
1°1' - 2° INCLUSIVE	12'-6"	12'-0"
2°1' - 6° INCLUSIVE	13'-0"	12'-0"
OVER 6°	13'-6"	12'-0"

**NOTES**

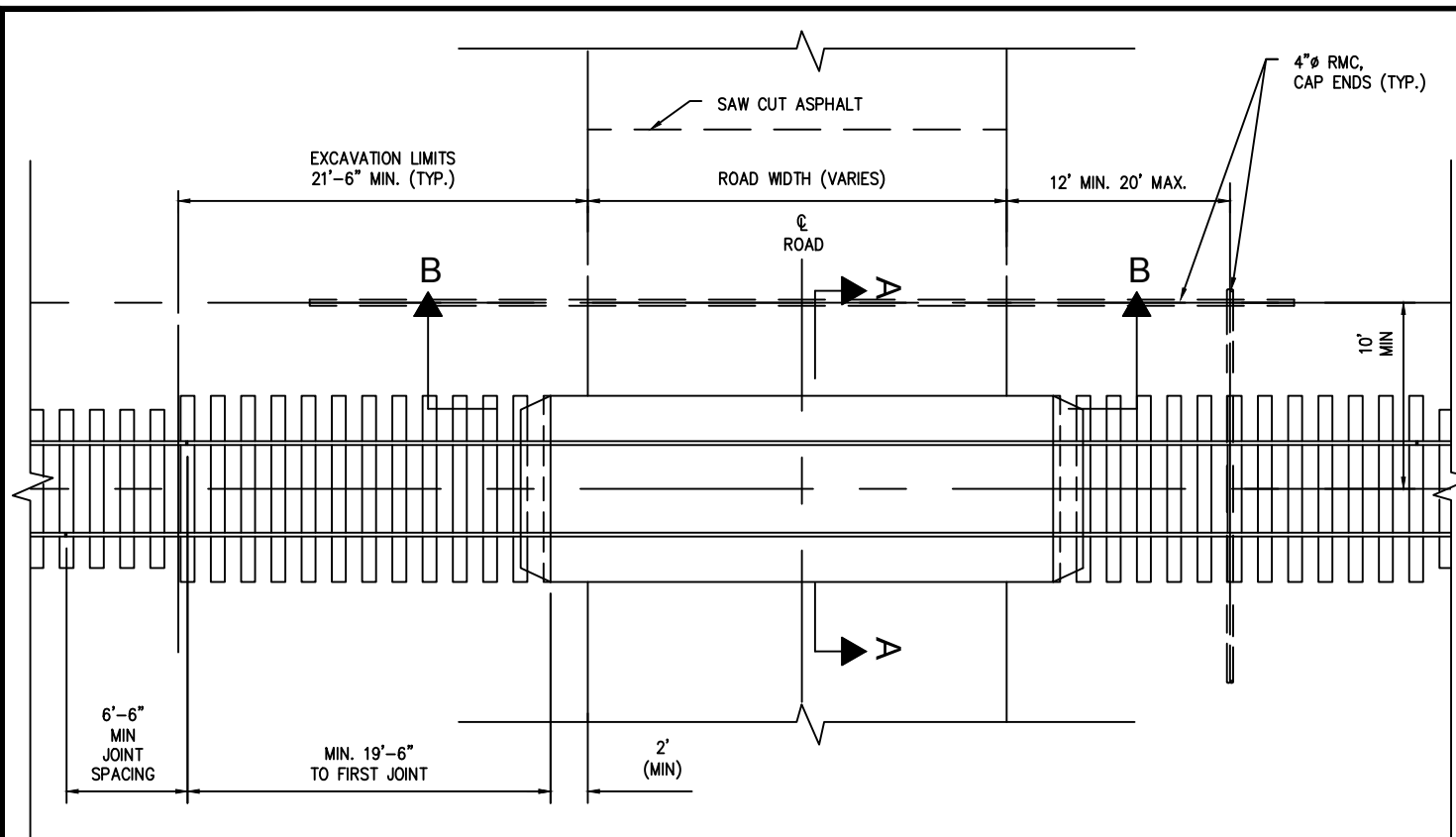
1. BALLAST DEPTH SHALL BE MINIMUM 12" UNDER TIE, MEASURED AT LOW RAIL.
2. ALL QUANTITIES ESTIMATED, REPRESENT IN-PLACE, COMPACTED MATERIAL, BASED ON 3,250 TIES PER MILE AND MINIMUM BALLAST AND SUB-BALLAST DIMENSIONS.
3. SUB GRADE SHALL SLOPE TO PREVAILING DRAINAGE SIDE ON TANGENT, OR TO THE INSIDE OF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



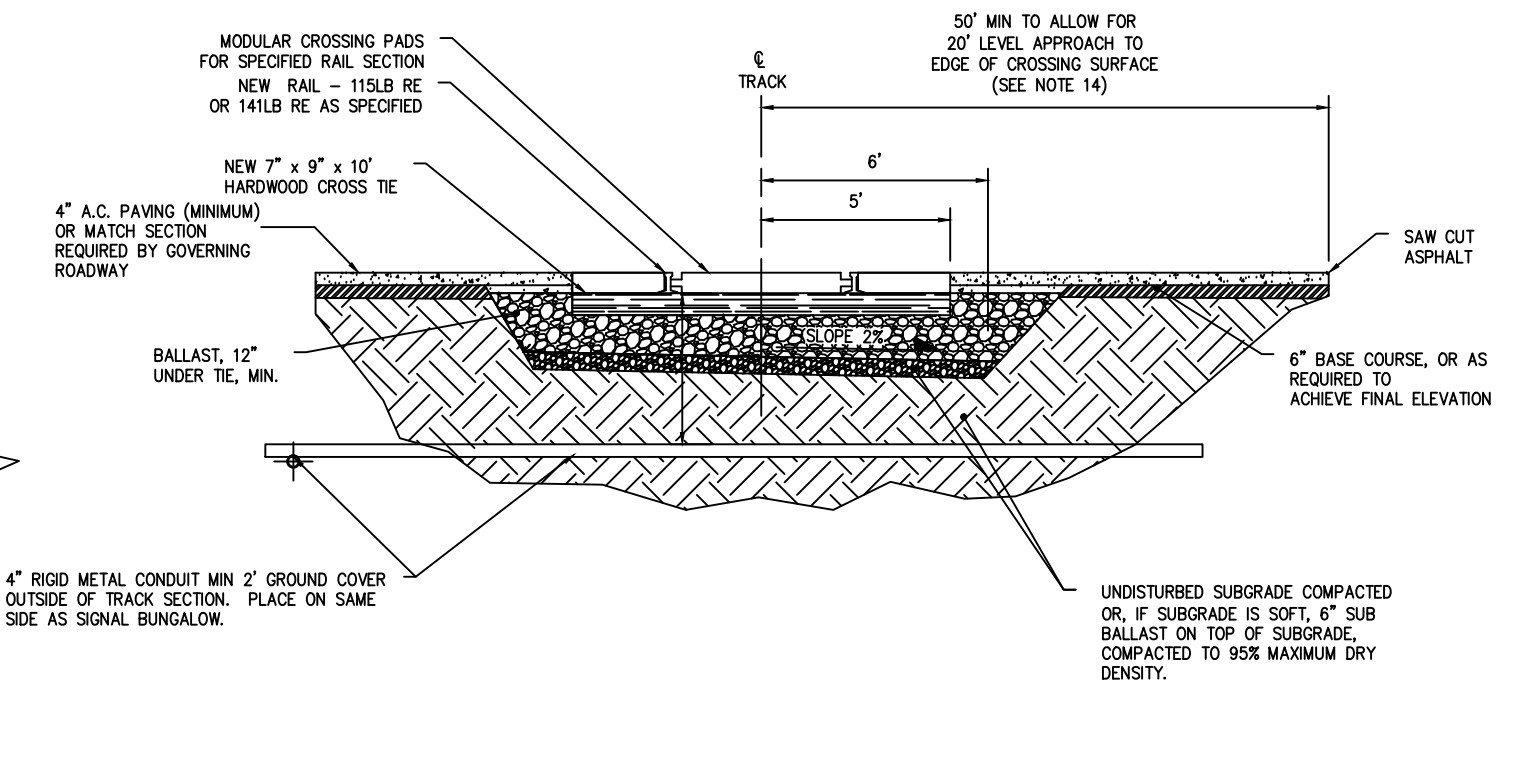
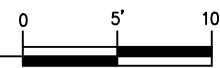
**ALASKA RAILROAD CORPORATION**  
OFFICE OF THE CHIEF ENGINEER  
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500 (907) 265-2456

STANDARD  
**MAIN LINE**  
BALLAST SECTIONS

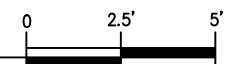
APPROVED: *J. Brooks* DATE: 12/29/03  
DESIGNED BY: REH SCALE: 1" = 4' FILE: s2.21-03.dwg  
DRAWN BY: BBF  
APPROVED BY: TEB DATE: 12/29/2003 **2.21-03**



**PLAN**  
SCALE: 1:10'

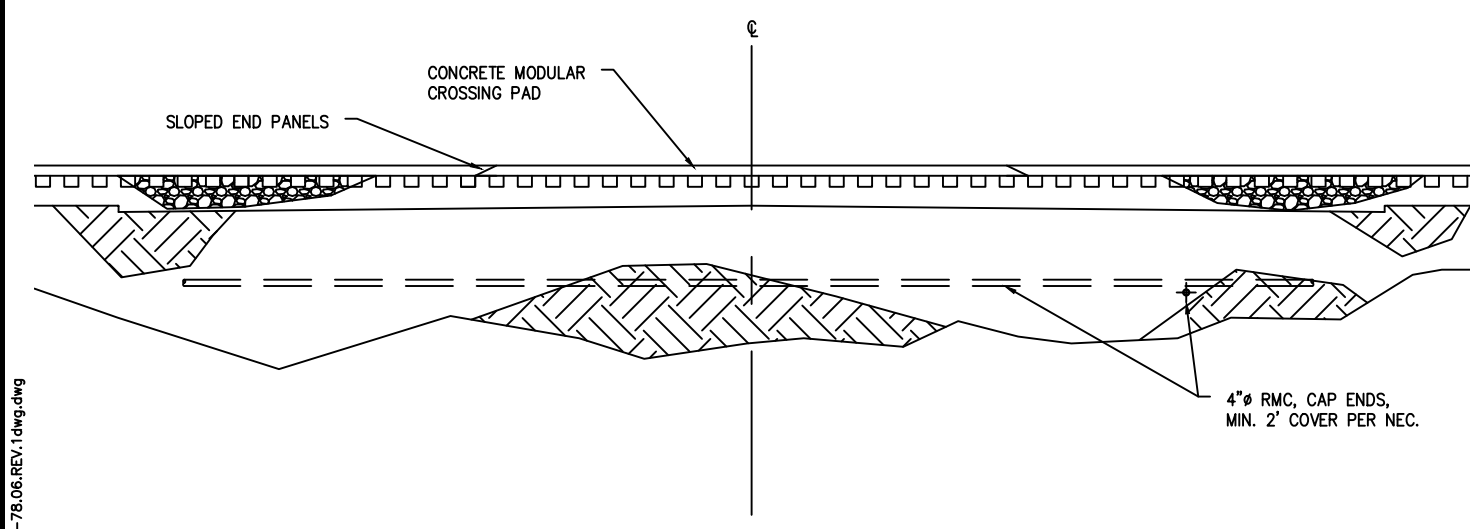


**SECTION A-A**  
SCALE: 1:5'

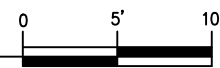


**GENERAL NOTES**

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 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.



**SECTION B-B**  
SCALE: 1:10'



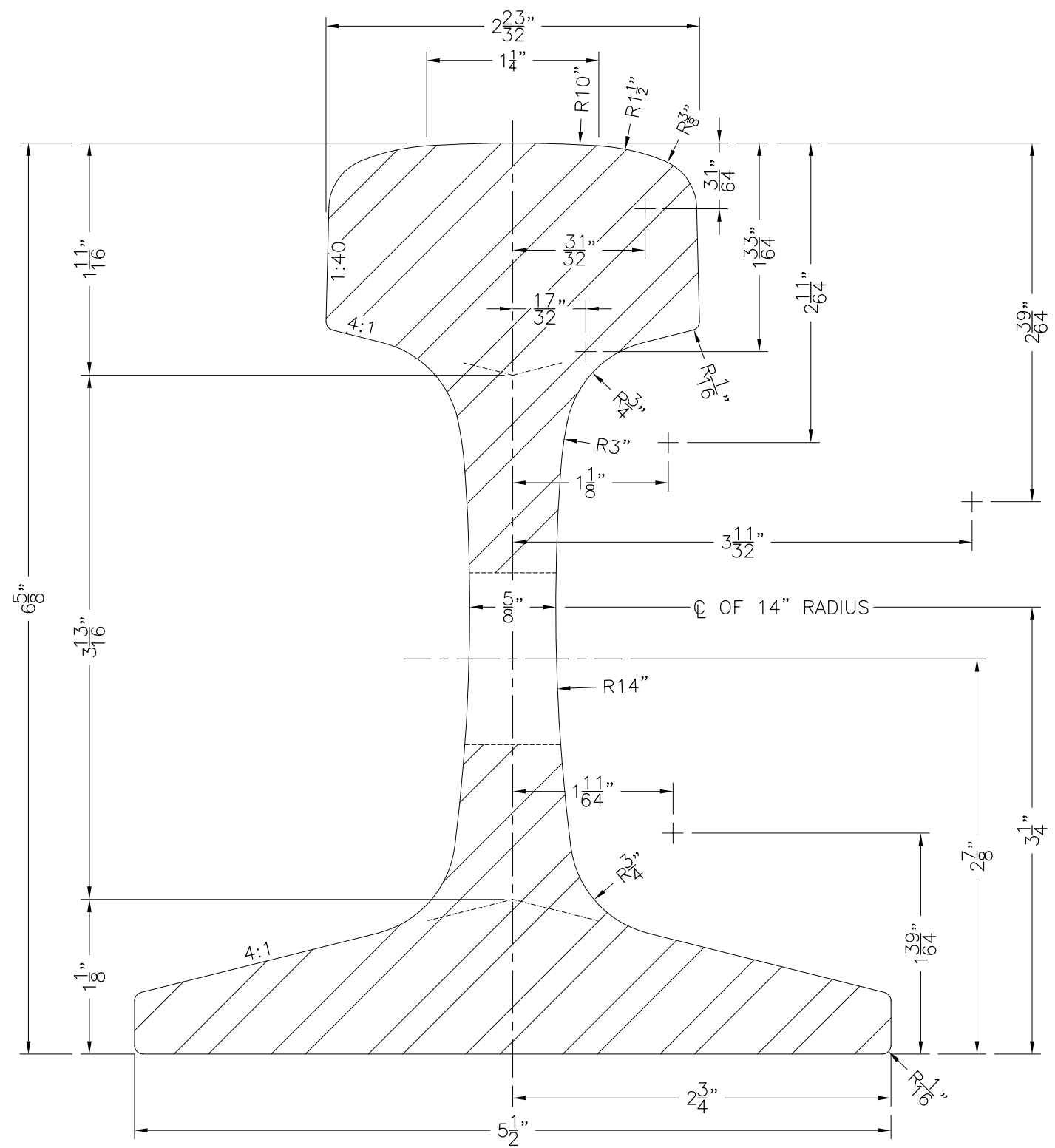
Locate Call Center of Alaska  
Anchorage Area.....278-3121  
Statewide.....800-478-3121  
who will notify subscribed utilities only.  
Other utilities need to be contacted individually.

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

**MODULAR CROSSING**

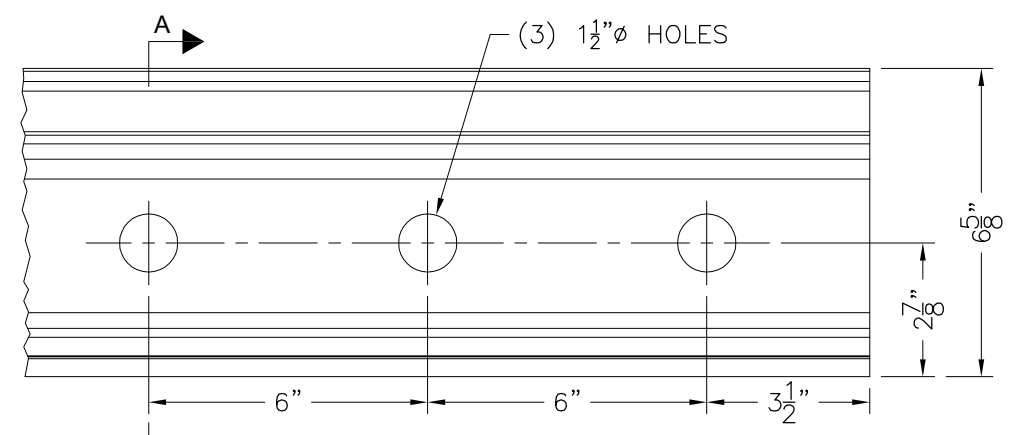
APPROVED:	DATE:
DESIGNED BY: JLS	SCALE: AS NOTED
DRAWN BY: BBF	FILE: s2-78.06.dwg
CHECKED BY:	DATE: 1/14/2019
APPROVED BY:	2.78-06

P:\Projects\Gabe Thomas\ACAD\s2-78.06.REV.1.dwg.dwg




SECTION A-A  
FULL SIZE

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



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

 <b>ALASKA RAILROAD CORPORATION</b> OFFICE OF THE CHIEF ENGINEER P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500 (907) 265-2456	
STANDARD <b>115 LB. RE RAIL SECTION</b>	
APPROVED:	DATE:
DESIGNED BY:	SCALE: AS NOTED
DRAWN BY: <b>BBF</b>	DATE: 5/02
APPROVED BY: <b>ENG DEPT</b>	3.1