

**I – OVERVIEW**

All of the various rail line segments, both active and inactive, were inspected via hi-rail<sup>1</sup> vehicle where tracks were in place and the right-of-way passable, and by walking, where use of hi-rail was not possible due to lack of track and/or heavy brush conditions. The inspections were carried out from June 16<sup>th</sup> to 19<sup>th</sup>.



Figure 5-1 Hi-Rail Vehicle on Pan Am Track

This report is broken down into four segments of rail line, both active and inactive, and discussed in order as follows:

1. Pan Am<sup>2</sup> Railway ownership, not including the segment in New Brunswick, Canada. (Active).
2. Pan Am Railway ownership in New Brunswick, Canada. (Active)
3. Maine D.O.T. ownership from Route 1 crossing, Baring, to end of track at Ayers Junction. (Inactive).
4. Ayers Junction to Route 1, Perry. (Inactive with track removed).

**II. – PAN AM RAILWAY OWNED SEGMENT IN MAINE**

This segment includes Woodland (Baileyville) Yard adjacent to the Domtar pulp & paper mill, the track leading to the industrial trackage accessing the currently inactive oriented strand board mill and chip & saw mill, owned by Louisiana Pacific northwest of the Domtar pulp and paper mill, and the main track and wye in Woodland. The wye<sup>3</sup> is located on the Maine side of the St. Croix River bridge in Woodland. This wye allows trains coming off the bridge to directly access either the Domtar mill or LP mill as well as providing a direct connection between the two mills. Skipping over the segment of the line in Canada, this segment also includes from where the Calais Industrial track crosses back in to the US at Baring and up to the end of track in Calais and a short piece from St. Croix Jct. to the Route 1 grade crossing on the line south to Ayers Jct.

Leaving Woodland, the line crosses over the St. Croix River (Sprague Falls Br. 273.77) into New Brunswick, Canada for 5.12 miles. That segment is described separately below. The line then comes back into the US at Baring at a second crossing of the St. Croix River (Baring Br. 268.65). This segment then includes the

<sup>1</sup> A Hi-Rail vehicle is a truck equipped with small railroad wheels at both ends that can be lowered onto the rails, allowing the truck to move along the railroad, guided by the rail wheels, but propelled by the rubber road tires. The rails then steer the truck. These wheels can be raised back up to allow the truck to then drive off of the railroad. Setting the truck on and off of the rails is normally done at a grade crossing.

<sup>2</sup> Pan Am Railway was formerly Guilford Transportation and prior to that, Maine Central Railroad. Pan Am currently owns and operates the segment of railroad from Woodland (Baileyville) to Calais. This is currently the only active rail line included in this study.

<sup>3</sup> A wye is a triangular shaped track arrangement at the junction of two rail lines. The three “legs” of the wye allow direct “head on” train movements to and from the three rail lines connected to the wye.

main track and auxiliary tracks from Baring to Calais, about 3 miles, and a short piece of the former Calais Branch from St. Croix Junction to the U.S. Route 1 crossing, a distance of about 0.36 miles. Also included within the sub-segment between Baring and Calais is a third bridge over the St. Croix River (Salmon Falls Br. 269.02). This bridge is also owned by Pan Am Railway and provides the connection to the New Brunswick Southern Railway (NBSR) in St. Stephen, New Brunswick (formerly the Canadian Pacific Railroad). The NBSR rail line is currently the only connection to and from the rest of the rail system in North America from the rail lines contained in this Report.

**A. Woodland Yard.**

The four yard tracks adjacent to the Domtar pulp and paper mill and associated turnouts (7) in Woodland were walked on June 16. The following recommendations and observations are noted:

The rail is generally 85# ASCE, in serviceable condition. Track surface and alignment were generally good. The track is reasonably well drained. Rail anchors were virtually nonexistent. The turnouts were in fair condition and needed only normal maintenance and switch timber replacement with the exception of the north end, where self guarded frogs have moved southward due to a general lack of rail anchors. These frogs need to be re-secured to the timbers.

1. An average of 15% of switch timber in the seven No.8 turnouts should be replaced. This would amount to 520 LF total of replacement timber.
2. Derailment damage should be repaired on Track 7. Approximately 230 feet of rail is rolled out on curve. Track should be re-gauged and replace 25% of crossties.
3. Correct track gage (4' - 10 1/4") in median between lanes, crossing to mill chip unloading, Track No. 7.
4. Replace approx. 20% of crossties (855 replacement crossties)
5. Install rail anchors on all tracks (3,375 total)



Figure 5-2 Woodland Yard, Middle Section



Figure 5-3 Woodland Yard, East End

It is assumed that this segment would be operated at no more than 10 miles per hour (FRA Class I).

**B. Main Track and Wye – to St. Croix River Bridge (Sprague Falls Br. 273.77).**

This segment was inspected by hi-rail and on foot. The rail section is 75# ASCE from Woodland Yard to the wye switch. This rail is adequate for the projected use with replacement of any defective rail. The main track leg of the Wye is constructed of 100# RA rail, which is adequate. The cost estimates include both the costs for leaving the 75# rail in place and for replacing with a heavier section.

A total of 360 - 100# and 1,170 75# rail anchors should be installed, box anchoring four ties in each 39 foot segment.

All track bolts in rail joints should be tightened, with an assumed replacement rate of 10% bolts and lock washers, or 20 ea. 100# bolts and 70 ea. 75# bolts

The rate of crosstie renewals on this segment is recommended to be 33%, or approximately 690 new crossties.

Both turnouts on the main track portion of the wye should be upgraded to 100# with 33% switch timber renewal. These turnouts are No. 8. Switch timber renewals would total 457 LF.

One shallow culvert should be replaced on the main track between Woodland Yard and the wye (assume 15" CMP, 20 feet long).

It is recommended that the existing ballast shoulder be plowed out to bottom of tie, 5 inches of stone ballast (one dump to top/rail) be placed and the track surfaced, lined and the ballast dressed. This would require 850 tons of ballast. Curve superelevation should be reduced to no more than 1".

It is assumed that this segment would be operated at no more than 10 miles per hour (FRA Class I) due to the curvature and light rail section.

**C. Track 3 - Leading to Louisiana Pacific Oriented Strand Board and Chip-N- Saw Mill (Pan Am portion) (This mill is currently inactive)**

This track, 2,684 feet in length, is constructed of 75# ASCE rail. The existing rail, with the replacement of any defective rail, is adequate. A total of 240 LF of rail and joint bars have been removed from the wye for maintenance use. This would have to be replaced. The tie plates remain in place.

Based on observations, assume that 10% of the 75# rail should be replaced due to defects, or 8 ea. 33 foot rails. The joint bars are approx. 20% Weber, which would be adequate for the service.

There are two grade crossings on this track segment. One has a very flat skew or crossing angle (Figure 5-4). It is assumed that new crossings surfaces and track would be constructed through these crossings.



Figure 5-4 Private Crossing on Spur to LP Mill in Woodland with High Skew Angle



Figure 5-5 Private Crossing near Woodland Jct. Note turnout that is north end of Wye

All track bolts should be tightened and missing or broken bolts replaced. Assume 10% bolt replacement, or a total of 65 bolts and lock washers.

Crosstie renewals at a rate of 30% would require replacement of 455 crossties.

Install rail anchors to box anchor four crossties in each 33 foot segment, requiring 1,100 rail anchors.

The turnout on the wye, toward the LP plant, is a No. 8, 85# turnout in serviceable condition. The switch timber is badly deteriorated and would require a 75% renewal, or 519 LF of replacement switch timber.

Existing shoulder ballast should be plowed out to the bottom of tie, 5 inches of new stone ballast placed, the track surfaced, lined and the ballast dressed. This would require 600 net tons of ballast.

It is assumed that this segment would be operated at no more than Class I speed of 10 MPH.

**D. Baring to Calais**

This segment is constructed with a combination of 75# ASCE and 85# ASCE rail. The short segment of 75# on the curve approaching the St Croix River Bridge (approx 500 track feet) should be upgraded to at least 100# rail. The remainder of the 85# rail should be adequate for the service, with the exception of one curve at Milepost C 1.7 in Milltown. Rail joints are a combination of head free and Weber joints, the head free being predominant.

The 85# rail on the curve through Bridge Street at Milepost C 1.7, approx. 0.2 miles in length, should be replaced due to wear and head flattening.

At Baring (Figure 5-6), the No. 8 turnout should be retired, along with the stub track (200 feet of 60 lb rail) and the main track realigned to eliminate the unnecessary reverse curve that occurs here due to the siding and turnout placement.



Figure 5-6 Turnout, Siding and Reverse Curve at Baring.



Figure 5-7 St. Croix Junction, Looking Towards Calais. Note Reverse curve due to Placement of Turnout in Curve to Track to the Right

At St. Croix Junction, the 85# No. 8 turnout should be upgraded to at least 100#. The turnout requires switch timber replacement of 60%, or 415 LF of new switch timber. The alignment at this turnout (see Figure 5-7) perhaps should be corrected. The turnout is located in a curve favoring the line south to Ayer's Junction and Bangor. A reverse curve is created on the line towards Woodland.

At Campbells Yard, (consisting of two parallel, double ended sidings on each side of the main track) the turnouts at the north end are both 85# No. 8 and would need at total of 692 LF of switch timber replacement. The turnout to Track No. 4 needs to have three missing frog bolts replaced. The south turnouts at Campbells yard, both 85#, No. 8, will need at total of 450 LF of switch timber replaced. The headblock timbers on the derail at the south end of track No. 4 need to be replaced, adding 30 LF of switch timber. Tracks 3 and 4 at Campbells Yard would require replacement of 775 crossties to be serviceable. Both tracks are constructed of 85# rail.



Figure 5-8 Campbells Sidings, South End



Figure 5-9 Campbells Sidings, North End

At Milltown Junction in Calais, (Figure 5-10) where the New Brunswick Southern interchange track diverges to cross the St. Croix River, the existing 85# No. 5 turnout for Track 20, the interchange track itself; should be upgraded to a 100# No. 8 if the alignment can be accommodated. A cursory assessment by eye indicates that this more gradual turnout would fit if the turnout were placed further along the Calais Branch toward Calais.



Figure 5-10 No. 5 Frog Turnout at Milltown Jct. Looking South. Salmon Falls Br. 269.02 to NBSR is to the Right.

For Class II, 286,000 lb rail car capacity operation it is recommended to upgrade the rail size, including turnouts, to 100lb or greater.

The Track 11 turnout leading to the unused roundhouse can be retired at Milltown. The runaround track (Track 5) could be extended a short distance by relocating the turnout south toward Milltown Junction if more runaround length is needed. Approximately 456 LF of switch timber should be renewed in the turnouts at both ends of track No. 5



The tail track extends approx. 650 ft. beyond the north switch of the runaround track. A car stop or barrier should be installed at the present end of track. The track could be extended north (railroad east) towards Calais, using the current foot path (the former railroad bed) as a roadbed.

Figure 5-11 Track 5 Runaround, Middle Track and Track 11 to Former Round House to Right

Crosstie renewals and other improvements over this segment:

1. Approximately 4,325 crossties should be renewed between Baring and the north end of track at Calais (Milltown Junction). In addition, if both sidetracks are retained at Campbells, 775 crossties should be renewed on those tracks.
2. Rail anchors should be added by box anchoring three additional crossties per 39 foot track segment, for a total of 7,960 new rail anchors. The existing rail anchors should be removed and reapplied to bear against the crossties.
3. Ditch cleaning should be performed on 15% of this route and brush cutting on 25%.
4. The existing shoulder ballast, which is generally clean bank run gravel, should be plowed out to bottom of tie to create a shoulder, provide subballast, and, for a sustainable Class I track condition; placement of 5 inches of stone ballast. The track would be surfaced, lined and the ballast dressed. Curve super elevation should be limited to 1", unless more is required for higher operating speed. This would require 5,880 tons of stone ballast for the main track and 820 tons of ballast for the sidetracks at Campbells and 120 tons for Track 5, Milltown Jct.
5. All rail joints should be tightened, planning on a track bolt replacement of 5%, or 320 track bolts and lock washers. Provision should be included to replace any defective or broken joint bars with bars freed up from track removal.
6. Remaining existing rail in this segment should be tested ultrasonically and defective rails found be replaced. Assume a rate of 5% defective, requiring replacement of approximately 2,428 LF of rail

**E. St Croix Junction to U.S. Route 1 Crossing**

This short segment is constructed of 85# ASCE rail. It is ballasted with bank run gravel.

The rail is in serviceable condition. The Joint bars are approx. 75% head free and 25% Weber joints. There are virtually no rail anchors in place and crossties have slued due to longitudinal rail movement, resulting

in track gage as tight as 4'- 7". The need for crosstie renewal is high due to both the deteriorated condition and the curvature.

It is recommended that approximately 2,500 track feet of 85# rail be replaced with a heavier section from St. Croix Junction to the west end of the curve west of Route 1 Crossing. This would provide serviceable 85# rail for replacement of service failures and defective rails. It would also tie in with a heavier rail section at the St. Croix Junction turnout and with a heavier rail section through the Route 1 crossing.

Crosstie renewal needs are estimated to be 295 for a Class I condition and 430 for a Class II condition. Consideration should be given to straightening slued crossties.

There is no need for ditching or ditch cleaning work on this segment as most is on a fill across wetlands.

It is recommended that the shoulder ballast be plowed out to bottom of tie, one placement of stone ballast with surfacing, lining and ballast dressing be performed for Class I condition with a second placement of ballast and surfacing, lining and dressing for a Class II condition. The ballast required would be 360 tons for Class I and 720 tons for Class II. Surfacing, lining and dressing for Class I would be 1,584 LF and 3,168 LF for Class II. The curve should be elevated for 1 1/2" unbalance.

Brush cutting is needed on 100% of this segment. This totals 1.1 acres.

**F. Culvert Observations St. Croix Second Crossing in Baring to St. Croix Jct.**

Most of the culverts were visually inspected to determine overall condition and to see if they were collapsed and impeding the free flow of water.

Milepost	Size	Length	Type	Fill	Condition
4.60	1' x 2'	25'	SBC	4'	Poor
4.55	1' x 1'	16'	OB		Poor
3.90	30"	60'	ALUM	1'	Poor
3.85	18"	50'	RCP	6'	Poor
3.75	18"	20'	CMP	4'	Failed
3.70	1' x 1'	16'	OB		Poor
3.40	36"	25'	CMP	6'	Fair
3.35	22"	50'	CIP	6'	Failed
3.10	36"	30'	CMP	4'	Good

**G. Culvert Observations St. Croix Junction to Route 1 Crossing**

266.71	2-36"	50'	CMP	7'	Plugged
266.78	36"	30'	CMP	6'	Poor
SBC = Stone Box Culvert		OB = Open Box			
RCP = Reinforced Concrete Pipe		CMP = Corrugated Metal Pipe			
CIP = Cast Iron Pipe		ALUM = Aluminum Pipe			

III. – PAN AM OWNED SEGMENT OF CALAIS TO WOODLAND LINE IN NEW BRUNSWICK

A. Track Conditions

This segment is 5.12 miles long and lies in the middle of the active Pan Am Railway described above.

The rail in this segment is predominantly 75# ASCE in poor condition and also a mixture of 85# ASCE and 100# ARA both in serviceable condition.

The 4.3 track miles of 75# rail should be replaced out-of-face. This rail exhibits numerous service failures such as broken bases, vertical split head defects and head and web separations.



Figure 5-12 Broken rail base in 75# Rail



Figure 5-13 Typical Track Conditions in Canadian Segment

Crosstie renewal rates on this segment vary from 20% to 40%. A total of 5,150 crossties should be renewed for an operation as FRA Class I condition. An additional 1,000 crossties should be renewed for a Class II condition.

The existing bank run gravel and, in some locations; the veneer of stone ballast, should be plowed out to the bottom of tie to provide a shoulder subballast. For Class I condition, one placement of 5 inches of stone ballast, track surfacing, alignment and ballast dressing should be accomplished. For Class II condition, a second placement of 5 inches of stone ballast with track surfacing, alignment and ballast dressing should be included.

Ditch cleaning should be performed on approximately 10% of this route prior to the placement of new ballast. Brush cutting should be performed on 33% of this route.

An additional 1,600 rail anchors should be applied to the 100# rail in this segment. An additional 600 anchors should be applied to the 85# rail, with the existing anchors removed and reset against the ties.

Joint bolts should be tightened on the 100# and 85# rail which will remain. This would be performed on approx. 0.6 track miles.

B. Culvert Observations, Canadian Segment

Milepost	Size	Length	Type	Fill	Condition
9.95	?		CMP	1'	Unknown
9.90	24"	20'	CMP	2'	New
9.30	Could not see the ends			5'	Unknown
8.48	18"	20'	CMP	1'	Good
8.40	36"	40'	RCP	15'	Failed
8.35	?	20'	CMP	2'	Failed
8.30	24"	40'	CIP	10'	Good
8.10	24"	20'	CIP	2'	Poor
8.00	24"	20'	CMP	2'	Good
7.75	Collapsed				Unknown
7.70	24"	24'	CMP	2'	Good
7.60	1' x 1'	16'	OB		Good
7.59	18"	20'	CMP	2'	Good
7.15	36"	75'	RCP	5' Beaver dam	Poor
6.90	3' x 4'	50'	SBC	10'	Good
6.80	36"	50'	RCP	5'	Fair

Skipped from MP 6.80 to MP 5.00 due to time.

IV. SUMMARY OF RECOMMENDED IMPROVEMENTS PAN AM CALAIS IND. TRACK

	Woodland to Canadian Border	In Canada	Canadian Border to Calais	St Croix Jct. to U.S. Route 1
<b>OOF rail and OTM Replacement</b>	240 LF	45,400 LF	3,112 LF	5,000 LF
<b>Replace Defective Rail</b>	132 LF 75#	165 LF 85#	2,428 LF 85#	None
<b>Crosstie renewals</b>	Yard 885 ea. Main 1,145 ea.	5,150 ea. CL I 6150 ea. CL II	Sidings 775 ea. Main 4,325 ea.CL I	295 ea. CL I 430 ea. CL II
<b>Switch Timber</b>	Yard 520 LF Main 976 LF	None	2,044 LF	None
<b>Ditch Cleaning</b>	1,000 LF	5,300 LF	3,300 LF	None
<b>Brush Cutting</b>	2.75 acres	20.7 aces	12 acres	1.1 acres
<b>Ballast</b>	1,450 NT	6,120 NT CL I 12,240 NT CL II	5,880 NT Main 940 NT Sidings	360 NT CL I 720 NT CL II
<b>Surfacing and Lining</b>	3750 LF	26,900 LF CL I 53,800 LF CL II	23,200 LF Main 4,300 LF S-tracks	1,584 LF CL I 3,168 LF CL II
<b>Rail Anchors</b>	3375 Yard 2,270 85# Main 360 100 # Main	18,600 on repl. Rail 2,200 on existing	7,960 on existing rail	820 on replacement rail
<b>Track Bolts and Washers</b>	155 ea.	For replacement rail	320 ea.	For replacement rail

Ultrasonic testing of the existing rail is recommended. The quantity of rail which will have to be replaced as a result of this inspection can only be estimated from experience. An assumption of six defects per track mile would result in replacement of 72 rails. The retirement of main track at Ayers Junction as well as the replacement of 85# rail east of U.S. Route 1 should generate sufficient replacement 85# rail.

The tie plates consist of segments of 6 1/2" x 9" single shoulder flat plates and 7 1/2" x 10 3/4" double shoulder canted plates. The limits of each type of tie plate shown on the track charts are not completely accurate. The existing tie plates can be reused if the 85# rail is to remain.



Figure 5-14 Typical Tangent Section



Figure 5-15 Close up of Tie Condition

The condition of crossties varies. There was no sign of any crosstie renewals since about 1975, with the vast majority of crossties dating from the 1930's, 1940's, 1950's and 1960's. Although many of these crossties appear to be sound, experience has found that, when the track is re-ballasted and raised, the older crossties will dry out and break down rapidly. Therefore, the recommendation for crosstie renewals is dense enough to compensate for that and provide adequate rail support and gauge restraint. Consideration should be given to straightening slued crossties.

V. - CALAIS BRANCH - MAINE DOT OWNERSHIP

U.S. ROUTE 1, BARING TO END OF TRACK AT AYERS JUNCTION (12.17 Miles)

A. General Track and ROW Conditions

This segment is constructed of 85# ASCE rail, generally in serviceable condition. The rail joints are primarily head free toeless with some Weber joints randomly mixed in. Both types appear to be serviceable. There are few rail anchors in track and those in place should be reapplied to bear against crossties.



Figure 5-16 Track on Curve with Adjacent



Figure 5-17 Track on Fill Section Wetland

The ballast is bank run gravel, generally clean and should be able to provide good support and drainage as subballast. It is recommended that the existing ballast be plowed out to bottom of tie to serve as a shoulder to support new stone ballast. The existing shoulders are generally narrow and the recommended operation will improve that somewhat as well as open drainage for any crosstie depressions in the subballast.

It is recommended that new stone ballast be distributed at the rate of 1,100 net tons per track mile for Class I speed. The track would be surfaced, lined and the ballast dressed. Curve elevations should be reduced to 1", or the elevation required for 1 1/2" unbalance for the maximum train speed. A second distribution of 1,100 net tons per track mile with surfacing, lining and dressing would be required for Class II operation.

Considerable ditch cleaning is recommended. This cleaning will not require excavating large volumes of material, but should clean and reshape the inverts of existing ditches.



Figure 5-18 Representative Ditch Section



Figure 5-19 Charlotte Siding to the Right

It is recommended that the Charlotte Siding (Figure 5-19) and the turnouts on each end be removed. One frog is missing and the other is unfit for main track use unless it has welding repair of the manganese casting of the RBM frog.

The east main track switch at Ayers Junction (Figure 5-20) should be removed, along with the remaining main track west of the switch. The No. 8 - 85# turnout could be salvaged for reuse elsewhere. The salvaged Rail could be used elsewhere on the Project.



Figure 5-20 East Main Track Switch Ayers Jct.



Figure 5-21 Ayers Jct. East Main Switch Behind Camera



Figure 5-22 Tracks 5 & 7 Ayers Jct.

The tail track switch at the Ayers Junction wye should remain in place and be rehabilitated. This track, designated Track 7, should remain in place for about 300 feet for bad order car set outs and M.O.W. machines. The Track 5 turnouts, both 85# No. 8, should be removed, along with the body of the track, shown as 830 feet. The Track 7 turnout should have 100% timber replacement, or 692 LF.

During the inspection, it was noticed that Lane Construction Corp. has two aggregate operations along this track segment. A private grade crossing provides access to one at approximately MP 264.5. The other aggregate operation is nearer Ayers Junction and not on line. It appears that the aggregate operation near Ayers Junction is producing crushed quarry rock and may be a potential source of ballast. During the rehabilitation project, the Charlotte Siding and adjacent land could be used for stockpiling ballast and loading into hopper cars for distribution.

Seven washouts were observed in the vicinity of MP 256.9 to MP 256.65. These appeared to be the result of beaver activity in a culvert and varied from 32 feet long and 16" deep to 15 Feet long and 9" deep. The total length of washed out track was approximately 170 feet.



Figures 5-23 and 5-24 Two of the Washouts between MP 256.6 and 256.9

At MP 258.4, the south rail had been torch cut completely through at one location. The rail is still in track but must be replaced.

Rail joints should be tightened out-of-face and broken or missing track bolts and lock washers replaced.

**B. Brush Clearing recommendations to obtain a 50 foot pattern:**

Extensive brush cutting is recommended. This work has been estimated by miles and is reported as total acres to be cut.

MP	Condition (Both sides)
266.55 to 266.00	Medium growth from 15' out from C/L to 25', and up to 6" soft wood trees.
266.00 to 265.00	Medium growth from 15' out from C/L to 25', and up to 6" soft wood trees.
265.00 to 264.00	Medium growth from 15' out from C/L to 25', and up to 6" soft wood trees.
264.00 to 263.00	Light growth from 15' out from C/L to 25'.
263.00 to 262.00	Light growth from 10' out from C/L to 25'.
262.00 to 261.00	Light growth from 10' out from C/L to 25'.
261.00 to 260.00	Light growth from 15' out from C/L to 25'.
260.00 to 259.00	Very light growth from 10' out from C/L to 25'.
259.00 to 258.00	Light growth from 10' out from C/L to 25'.
259.00 to 258.00	Light growth from 10' out from C/L to 25'.
258.00 to 257.00	Medium growth from 15' out from C/L to 25'.
257.00 to 256.00	Medium growth from 15' out from C/L to 25' on N/S.
256.00 to 255.00	Light growth from 20' out from C/L to 25'
255.00 to 254.50	Light growth from 15' out from C/L to 25'.
Approximate acreage to cut = 41 ¼ Acres	

**C. Culverts:**

Some of the culverts could not be found that were on the inventory list and the team would recommend some additional culverts be installed at the washout locations. E.g. MP 256.90 to MP 256.65 near Round Pond.

At MP 261.79 the RCP culvert runs under the track and has a CMP under the Charlotte Road that appears to be in good condition.

At MP 261.67, this 12" CMP has failed and we recommend this culvert be replaced at a proper elevation to accommodate the water level and also be increased by one size.



Figure 5-25 Crushed CMP Pipe at MP 261.67

At several of the failed culverts locations a washout has occurred in center of the track.

**D. Culvert Inventory from Route 1 (MP 266.55) – Baring to Ayer’s Junction (254.50)**

Milepost	Size	Length	Type	Fill	Condition
266.15	30"	25'	CMP	3'	Failed
266.06	12"	30'	Tile	6'	Failed
265.87	24"	50'	CMP	2'	Failed
265.80	1' x 1'	16'	OB		Poor
265.70	1' x 1'	16'	OB		Poor
265.60	1' x 1'	16'	OB		Poor
265.14	1' x 1'	16'	OB		Poor
264.99	24"	30'	CMP	2'	Fair
264.66	24"	50'	CMP	12'	Good
264.40	Could not find.				
264.20	12"	20'	CMP	1'	Failed
264.19	12"	20'	CMP	1'	Failed
263.63	Could not find.				
263.53	1-18", 1-20"	25'	1-RCP, 1CMP	2'	RCP-Fair, CMP-Failed
263.43	18"	20'	CMP	2'	Failed
263.21	12"	20'	CMP	2'	Failed
263.09	10"	25'	Alum	2'	Good
263.00	1' x 1'	16'	OB		Poor
262.90	18"	20'	CMP	1'	Failed
262.22	1' x 1'	16'	OB		Failed
262.15	2-24"	25'	RCP	3'	Failed
262.00	1' x 1'	16'	OB		Failed
261.79	2-60"	40'	Concrete	2'	Good



Milepost	Size	Length	Type	Fill	Condition
261.67	12"	20'	CMP		Failed
261.60	1' x 1'	16'	OB		Poor
261.22	2-30"	30'	CMP	2'	Failed
261.06	24"	24'	CMP	2'	Failed
260.92	20"	24'	CMP	1'	Poor
260.82	2-60"	30'	RCP	2'	Good
260.20	24"	30'	CMP	1'	Failed
260.00	24"	30'	CMP	2'	Fair
259.85	24"	24'	CMP	4'	Failed
259.36	24"	24'	RCP	2'	Good
259.28	24"	24'	CMP	3'	Failed
258.91	48"	30'	CMP	2'	Fair
258.79	24"	30'	CIP	6'	Good
258.53	30"	24'	CIP	5'	Fair
257.60	18"	24'	CIP	3'	Failed
257.40			SBC		Failed
256.90	(See summary notes above)				
256.80					
256.75					
256.65					
256.28	24"	25'	CIP	1'	Good
256.21	1' x 1'	16'	OB		Poor
256.14	16"	20'	CMP	1'	Failed
256.10	14"	20'	RCP	4'	Failed
256.06	24"	24'	RCP	4'	Failed
256.04	24"	20'	CMP	2'	Failed
255.99	12"	24'	CMP	3'	Failed
255.95	14"	20'	CMP	4'	Failed
255.92	1' x 1'	16'	OB		Poor
255.88	1' x 1'	16'	OB		Failed
255.84	24"	30'	CMP	3'	Failed
255.80	1' x 1'	16'	OB		Poor
255.75	18"	20'	RCP	2'	Poor
255.69	30"	?	RCP	2'	Failed
255.50	1.5' x 3.5'	40'	SBC	6'	Failed
255.35	24"	30'	CIP	3'	Good
255.17	18"	40'	CMP	4'	Failed
255.08	18"	20'	CMP	1'	Failed
254.76	18"	25'	CMP	0.5'	Failed
254.70	2-16"	20'	CMP	2'	1-Fair, 1-Failed
254.50	36"	30'	CMP	3'	Failed

**E. Culvert Inventory Wye Track at Ayer's Jct.**

Milepost	Size	Length	Type	Fill	Condition
N/A	24"	30'	CMP	6'	Failed
N/A	18"	20'	CMP	1'	Failed

**F. Highway Crossings:**

The team completed the "Crossing Assessment Check List" at the following crossings locations:

1. Baring Road-(Route 1) Calais
2. Lane's Construction Rd.-Calais (Private)
3. Moosehorn Refuge-Charlotte (Private)
4. Charlotte Rd.-Charlotte
5. Mt. Tom Rd.-Pembroke.



Figure 5-26 Lane's Construction Crossing



Figure 5-27 Moosehorn Refuge Crossing



Figure 5-28 Charlotte Road Crossing

**G. Overhead Bridge Clearances:**

No overhead structures in this segment which could restrict vertical clearances for rail equipment.

**H. Ditching Recommendations:**

Recommend 25-30% of the ditches be cleaned over the 12 mile segment.

**I. Wye Track at Ayer's Jct.**

This leg of wye connects the Eastport Branch to the segment towards Calais is noted on valuation plans as 1,152 feet in length, including the 2 No. 8 turnouts at each end.

1. Ditching Recommendations:

Recommend 5% or less of ditching.

2. Brush Clearing recommendations to obtain a 50 foot pattern:

Light/Medium growth from 15' out from C/L to 25'. Approximate acreage to cut (1.269') = ¼ Acre.

**J. Summary of Recommended Improvements - Route 1 Crossing to Ayers Junction**

<b>Out of face rail and OTM replacement</b>	None
<b>Replace Defective Rails</b>	2,800 LF
<b>Crosstie Renewals</b>	14,230 ea.main track for Class I 18,060 ea.main track for Class II 115 ea. Sidetrack
<b>Switch Timber</b>	692 LF
<b>Ditch Cleaning</b>	Estimated at 31,700 LF of ditch
<b>Brush Cutting</b>	Estimated at 41.25 acres total
<b>Ballast</b>	14,400 NT for Class I 28,800 NT for Class II 100 NT for siding
<b>Surfacing, Lining and Dressing</b>	64,950 LF for Class I 129,900 LF for Class II 300 LF sidetrack
<b>Rail Anchors</b>	33,200 ea.
<b>Track Bolts and Washers</b>	790 ea.

Note that for Class II, 286,000lb car capacity operation, the recommended rail size is 100# or greater.

**VI. AYERS JUNCTION TO ROUTE 1, PERRY (Eastport Branch)**

**A. Evaluation of Right-of-Way and Roadbed**

The total length of this segment is 8.72 miles from Milepost 254.47 Ayers Junction wye switch to Milepost 263.19 at the Route 1 crossing in Perry. This route was abandoned by the Maine Central in the late 1970's and the track removed shortly thereafter.

The roadbed was inspected on foot from Ayers Junction to Perry. Those culverts which could be found were inspected to the extent that they could be accessed.

From the tail track at Ayers Junction to a point about 700 feet south, the roadbed appeared to be in usable condition after the remaining old crossties have been removed.

From this point south to Robbinston Road, MP 255.95, the gravel roadbed has been improved and kept graded. A homemade York- type rake was noted on a roadway which enters the right-of-way at about MP 254.75. The roadbed is being used by vehicles frequently.



Figures 5-29 and 5-30 Views of ROW east of Ayers Junction

Brush cutting and ditch cleaning should be performed virtually out-of-face from Ayers Jct. to Robbinston Road. There is heavy beaver activity in this segment and water had backed up to the point of saturating the roadbed in places.

At about MP 255.8, a plank and crosstie trail, about 4 feet wide, departs east from the roadbed (Figure 5-31). This trail may allow snowmobiles to operate across the bog.



Figure 5-31 Plank and Crosstie Trail Off ROW



Figure 5-32 Rutting due to Logging Operations

The 36" CMP, shown on the valuation plans about 200 feet north of Robbinston Road, could not be located.

Between East River Road (MP 257.95, also called South Meadow Road), and MP 259.1 logging is being carried out west of the right of way. The roadbed is being used as a haul road to access the wood lot from the East River Road. The roadbed is badly rutted in this area (Figure 2-32).

At about MP 259.1, the roadbed is flooded to a depth of 6" to 12" for about 125 feet. This appears to be account of beaver activity on both sides of the roadbed, backing up water.

At about MP 259.3, a woods road intersects the roadbed from the east. There has not been much activity here recently.

At about MP 259.7, a roadway enters the roadbed from the east, with vehicles accessing this intersecting road from the north (see photos).

At about MP 259.8, the roadbed was found to be washed out for about 20 feet, 2' deep due to lack of cross drainage facility and beaver activity. The culvert which was shown at this location could not be found.

At about MP 260.3, a shallow CMP of 15" – 18" diameter was found. This culvert is virtually destroyed.

At about MP 260.5, a seven foot high barrier of earth and debris has been pushed up, (Figure 5-34) apparently with a dozer, in a rock cut. This was obviously intended to block motor vehicle access. ATV's are detouring around the barrier and continuing to use the roadbed. Trash had been dumped on the roadbed north of the barrier at some time in the past.



Figure 5-33 Wet Area in Rock Cut



Figure 5-34 Debris Pile in Rock Cut

At about MP 260.7, a stone box culvert, about 21" wide and 32" high, with about six feet of cover was located. No problems were observed.

At about MP 260.8, a shallow cast iron culvert about 8" diameter was found. This pipe was probably located in a tie crib.

At about MP 261.0, there is washing and erosion of the gravel due to a blocked ditch.

A woods road, not used recently, intersects the roadbed from the west at about MP 261.2.

At about MP 261.5, the roadbed had been washed out for about 200 feet, apparently from beaver activity. It had been repaired by a local contractor with an excavator on the day of the inspection, restoring the road access. No culvert was found but a culvert of about 30" diameter should be installed and the roadbed regraded and topped with gravel.

At MP 261.64, a stone arch culvert carries the Little River under the ROW. The arch spans about 10 feet, appeared to be in good condition and has about 16 – 18 feet of cover (Figure 5-35).



Figure 5-35 Stone Box Culvert

The roadbed from here to South Meadow Road in Perry (MP 262.03) portion is being used as a rough road. Ditch cleaning and brush cutting should be performed over about 33% of the length. At about MP 261.9, truck loads of trash (brush, demolition debris, etc.) had been dumped on the west side of the roadbed (see Figure 5-37).

Just before South Meadow Road, a 16" RCCP was found parallel to and just north of the crossing. The invert could not be seen and the culvert appeared to be in poor condition.

The segment from Golding Road in Perry (MP 262.56) to the Little River Bridge (MP 262.90) and from the Little River Bridge to Perry was densely vegetated with alders, raspberry vines and other plants. Walking was difficult and sometimes it was difficult to follow the roadbed.



Figure 5-36 Dense Vegetation in Perry



Figure 5-37 Trash Dumped on ROW

Trash has been dumped on the ROW in several places.

About 500 feet south of Golding Road, a washout of about 5 feet in length was found, filled with logs. This may have been a culvert location. Immediately south of the Golding Road, relatively new homes occupy land on both sides of the ROW cut. It is possible that there has been encroachment with fill at this location. Due to the vegetation, this could not be verified with any certainty.

At about MP P-262.7, a culvert consisting of a 24" CMP inserted into a failed stone box was noted. The CMP has disintegrated. This culvert has approximately 25 feet of cover and the outlet is tidal, with the high water line above the top of the culvert.

**B. Summary:**

1. Ditching:  
Recommend 30-40% of the ditches be cleaned over the entire segment.
2. Brush Removal:  
Cut brush on both sides of the track totaling approximately 31 acres.

3. Culverts:  
Some of the culverts could not be found. Most of the culverts have failed or are in poor condition.  
  
At MP 258.25 there is a Stone Box Culvert (3' x 4') that has failed on the outlet end but water is moving through the culvert.  
  
At MP 259.20 the beaver have plugged 2-30" RCP's and the condition is unknown.  
  
At MP 262.24 the Stone Box Culvert Headwall stones on the inlet & outlet ends have collapsed and minor erosion above the outlet but is taking water.
4. Highway Crossings:  
No crossing information was taken.
5. Overhead Bridge Clearances:  
No overhead structures in this segment.

**C. Brush Clearing recommendations to obtain a 50 foot pattern:**

Milepost	Condition (Both sides)
256.20 to 257.72	Light growth from 15' out from C/L to 25'
258.00 to 259.25	Medium growth from 10' out from C/L to 25', and up to 6" soft wood trees and 4" hardwood.
262.03 to 262.56	Very light growth over entire roadbed and slopes
263.10 to 263.19	Light growth over entire roadbed and slopes.
Approximate acreage to cut = 15.35A	

**D. Culvert Inventory from Ayer's Junction MP 254.50 to MP 263.19 Route 1-Perry**

MP	Size	Length	Type	Fill	Condition
256.50	18"	30'	RCP	1'	Failed
256.51		30'	SBC	1'	Failed
?	20"	20'	CMP	1'	Failed
256.90	3' x 4'	25'	SBC	1'	Fair
258.25	3' x 4'	75'	SBC	15'	Failed HW
Outlet end collapsed and could not see though but water moving.					
259.20	2-30"	20'	RCP	2'	Unknown Beaver in one end and plugged.
262.40	12"	20'	CMP	2'	Failed
262.38	12"	20'	CMP	2'	Failed
262.24	?	75'	SBC	20'	Failed HW

Inlet & Outlet Headwall stones collapsed, minor erosion above but taking water.

**E. General Observations**

A provision should be included in estimates and contract requirements for replacement of any defective or broken joint bars. Broken “channel” bars on Weber joints are not a significant strength issue and do not need to be replaced.

Elevation on curves should be set at 1 ½” unbalance, for 25 MPH freight operation.

Note that for Class II, 286,000 lb. car capacity operation, the recommended rail size is 100# or greater.

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