GREATER DENVER TRANSIT

greaterdenvertransit@gmail.com

Submitted as Public Comment to the RTD Board Meeting, June 25th, 2024.

June 25th, 2024

Erik Davidson, RTD Board Chair
Regional Transportation District
1660 Blake Street
Denver, CO 80202

Dear Chair Davidson,

Greater Denver Transit (GDT) would like to respectfully submit public comment on the following two topics:

Southeast Light Rail Corridor Preventative Maintenance

GDT attaches to this letter ongoing correspondence with GM & CEO Johnson regarding the situation on the Southeast Light Rail Corridor. A number of our questions currently remain unanswered and it is clear that the agency's response is still subpar, particularly with the inability to publish a workable schedule for the E, H and R lines. We are requesting responses to these questions by July 3rd, and kindly look forward to them.

Potential Ballot Recommended Action (TABOR "De-Brucing")

GDT is in support of an RTD-sponsored ballot measure that will allow the agency to "de-Bruce" and be free of Colorado Taxpayer's Bill of Rights (TABOR) revenue restrictions in perpetuity.

Lifting the revenue restrictions imposed by TABOR will empower RTD to address growing transportation demands, invest in essential infrastructure projects, enhance service quality, and contribute to the overall economic and environmental health of the region. As the Denver Metro area continues to expand, ensuring that RTD has the financial capability to meet these challenges is not just beneficial but necessary for the region's future prosperity.

Therefore GDT urges all Directors to vote "Yes" on an RTD sponsored ballot measure that will allow the agency to "de-Bruce".

Thanks for all you do,

James Flattum

Richard Bamber

CC: RTD Board of Directors
Debra Johnson, RTD General Manager & CEO

Gmail

Greater Denver Transit <greaterdenvertransit@gmail.com>

Letter to RTD GM & CEO Debra Johnson - 19th June 2024

Greater Denver Transit <greaterdenvertransit@gmail.com>

Tue, Jun 25, 2024 at 12:16 PM

To: Debra Johnson <debra.johnson@rtd-denver.com>
Cc: RTD General Manager <generalmanager@rtd-denver.com>, Dave Jensen <dave.jensen@rtd-denver.com>, RTD Board Office <RTD.BoardOffice@rtd-denver.com>, Jack Kroll <Jack.Kroll@rtd-denver.com>

Dear GM & CEO Johnson,

Thank you for your response on June 21st, 2024 to our letter dated June 19th. GDT has reviewed the part of the RTD website cited at www.rtd-denver.com/light-rail-speed-restrictions and associated linked pages plus also listened to the special board meeting held on June 24th, 2024 in full.

We would like to extend our sincerest thanks to both you and your team(s) for greatly expanding the detail available on the RTD website that outlines the project and its impacts. We especially appreciate the detailing of correspondence between RTD and the Public Utilities Commission (PUC), and the publishing of the 48-hour reports, and the beginnings of a maintenance schedule.

This transparency is greatly welcomed and signals the start of a meaningful effort to engage the public, which we believe is essential to both fostering and maintaining public trust in RTD.

That said, there remains a number of our questions that have either not been fully answered or have not been responded to. We would therefore like to request that these questions are directly answered by yourself or a designated member of staff.

Adoption of American Public Transportation Association Rail Transit Track Inspection and Maintenance Standards

1. ***On what date did RTD formally adopt APTA RT-FS-S-002-02, Rev. 1 as its track inspection standard?***

   An exact date has not been provided. Please provide this.

2. ***If possible, please provide a copy of the track inspection standard that was previously used.***

   A document has not been provided. From PUC filings we are aware of a memo from Kirk Strand to Jyotsna Vishwakarma sent on May 10, 2023 that states “The current RTD MOW Track Safety Standards 2021 is a direct adaptation of the APTA-RT-FS-S-002-02 Rail Transit Track Inspection and

Maintenance Standard, Revision 1, published in 2017". Please provide the internal document being referred to.

3. ***Could RTD staff have reasonably foreseen that a possible result of the introduction of APTA RT-FS-S-002-02, Rev. 1 as the agency's track inspection standard would be the widespread imposition of "slow zones"?***

   This was answered by Dave Jensen's statement that staff could not have reasonably foreseen this at the Special Board Meeting on June 24th.

4. ***RTD has indicated that "trained staff now ride the system twice weekly…". GDT takes this to mean "...riding over the track in speed a vehicle at a speed that allows detection of noncompliance with these standards", in accordance with Section 3.1.a (page 2) of APTA RT-FS-S-002-02, Rev. 1. Please describe the vehicle being used for this action, including how inspection staff can see the track whilst riding the vehicle, and state the average this vehicle travels at.***

   GDT is satisfied with RTD's answer to this question. Thank you.

5. ***Are the "slow zones" being imposed in accordance with Section 10.1.8 and Table 11c***

(page 20) of APTA RT-FS-S-002-02, Rev. 1?

Dave Jensen stated that the APTA standards are the reason for the imposition of the slow zones during yesterday's special board meeting but did not cite the specific clause (s) and table(s) in the standards. As such, this question has not been answered.

6. ***For rails suffering "rail burn" or "wheel burn", is rail grinding ("resurfacing") a solution up to a certain length and depth of defect? If so, up to what length and depth is RTD planning to use this remediation method?***

   An exact length and depth has not been provided. Please provide this.

7. ***After the rail has been replaced or otherwise remediated, how long must a "slow zone" remain in place before it is considered safe for trains to pass over the affected area at maximum allowable line speed?***

   An exact length of time has not been provided. Please provide this as it is important to understand RTD's track handback procedures.

Agency Response to "Slow Zones"

1. ***Work with ATU 1001 to publish workable temporary schedules for the E, H, and R Lines***

which can reasonably be adhered to by operators. These schedules should be revised weekly and/or when "slow zones" are imposed or lifted.

To date, GDT has seen no evidence this is being done, even after contacting ATU ourselves.

2. ***Work with ATU 1001 to provide alternative methods of transportation for E, H, and R Line riders (e.g., bus bridges) to minimize adverse impacts on journey times.***

   To date, GDT has seen no evidence this is being done, even after contacting ATU ourselves..

3. ***Publish a schedule for all remaining inspections being carried out in the current quarter year cycle, which should be the first round being carried out, in accordance with APTA standard RT-FS-S-002-02, Rev. 1 and associated remedial works. This should include contingency dates for remedial works, should further defects be found during scheduled inspections.***

   While GDT notes what has been published on the website so far, there is no information regarding when inspection on lines other than the SE corridor are planned to take place.

4. ***Commit to 100% transparency with the public, including publishing all light rail-related***

incidents, inspection and remedial works going forward, as permissible.

As stated earlier, GDT welcomes the increased transparency. However, the situation is still far from satisfactory as key documents and have not been provided or questions answered fully.

5. ***Rescind communication restrictions that unnecessarily restrict staff and / or the Board of Directors from providing proper oversight, handling, and communications on this issue.***

   As discussed in the Special Board Meeting, held on June 24th, 2024, any memo or internal communication that expressly tells staff that they should or should not do something is an order. We therefore repeat our request.

6. ***Respond fully to the questions earlier in this letter and also the Operations, Safety & Security Committee public comment letter sent in by GDT on Wednesday, June 12th, 2024. Please see a copy of said letter provided along with this submission for reference.***

   This item is still outstanding.

Again, we would like to thank you and your team(s) for efforts undertaken to increase transparency regarding

this project. We hope that future projects will build on this increased transparency and continue to provide meaningful information for riders and the public.

Kind Regards,

Richard Bamber and James Flattum
(For and behalf of Greater Denver Transit)

(303) 803-3898
greaterdenvertransit@gmail.com
www.greaterdenvertransit.com

[Quoted text hidden]

20231030_23I-0047R_Attachment1_MemoIndustryTrackStandards.pdf
665K

Gmail

Greater Denver Transit <greaterdenvertransit@gmail.com>

Letter to RTD GM & CEO Debra Johnson - 19th June 2024

Debra Johnson <debra.johnson@rtd-denver.com> Fri, Jun 21, 2024 at 5:05 PM
To: Greater Denver Transit <greaterdenvertransit@gmail.com>, RTD General Manager <generalmanager@rtd-denver.com>
Cc: Dave Jensen <dave.jensen@rtd-denver.com>, RTD Board Office <RTD.BoardOffice@rtd-denver.com>, Jack Kroll <Jack.Kroll@rtd-denver.com>

Dear Messrs. Bamber and Flattum,

In response to your letter on June 19, 2024, I am providing the following information for your awareness. Answers to the questions you posed in that correspondence to me have been added to RTD's webpage, which is available at www.rtd-denver.com/light-rail-speed-restrictions. Additional photos, letters, videos, frequently asked questions, timelines, customer support options, situational updates, and a revised map are also available on the webpage.

RTD's webpage related to this matter will continue to be regularly updated in the coming days and weeks.

Thanks,

—Debra

Debra A. Johnson

General Manager and CEO

Regional Transportation District
1660 Blake Street, BLK-35

Denver, CO 80202

We make lives better through connections.

GREATER DENVER TRANSIT

greaterdenvertransit@gmail.com

Wednesday, June 19th, 2024

Debra Johnson, General Manager (GM) and CEO
Regional Transportation District (RTD)
1660 Blake Street
Denver, CO 80202

Light Rail Inspections and Rail Defect Remediations

Dear GM & CEO Johnson,

Adoption of American Public Transportation Association Rail Transit Track Inspection and Maintenance Standards

Greater Denver Transit (GDT) writes with questions relating to the adoption of American Public Transportation Association (APTA) standards for light rail track inspections. We are writing on the basis that APTA standard RT-FS-S-002-02, Rev. 1, "Rail Transit Track Inspection and Maintenance", has been recently adopted by RTD to define the agency's light rail track inspection criteria. If this is not the case, please reply referencing what standard is actually in effect for light rail track.

We kindly request answers to the following questions by COB on July 3rd, 2024. While not every question may be fully answerable due to circumstances outside of the agency's control, we ask that questions be answered to the fullest extent possible.

1. On what date did RTD formally adopt APTA RT-FS-S-002-02, Rev. 1 as its track inspection standard?

2. If possible, please provide a copy of the track inspection standard that was previously used.

3. Could RTD staff have reasonably foreseen that a possible result of the introduction of APTA RT-FS-S-002-02, Rev. 1 as the agency's track inspection standard would be the widespread imposition of "slow zones"?

4. RTD has indicated that "trained staff now ride the system twice weekly…"[1]. GDT takes this to mean "...riding over the track in a vehicle at a speed that allows detection of noncompliance with these standards", in accordance with Section 3.1.a (page 2) of APTA RT-FS-S-002-02, Rev. 1. Please describe the vehicle being used for this action, including how inspection staff can see the track whilst riding the vehicle, and state the average speed this vehicle travels at.

5. Are the "slow zones" being imposed in accordance with Section 10.1.8 and Table 11c (page 20) of APTA RT-FS-S-002-02, Rev. 1?

6. For rails suffering "rail burn" or "wheel burn", is rail grinding ("resurfacing") a solution up to a certain length and depth of defect? If so, up to what length and depth is RTD planning to use this remediation method?

[1] https://www.rtd-denver.com/light-rail-speed-restrictions, 'What are enhanced inspections?' drop-down

7. After the rail has been replaced or otherwise remediated, how long must a “slow zone” remain in place before it is considered safe for trains to pass over the affected area at maximum allowable line speed?

We would like to respectfully point out that statements of a general nature that claim track maintenance depends on “a number of factors”, without additional detail, will likely result in us writing back for further clarification. These information requests are made in accordance with the PUC’s request, transmitted on June 14th, 2024, that RTD “continue to increase its transparency to the public on its efforts to improve rail conditions and return service to normal operations.”

Agency Response to “Slow Zones”

As the imposition of “slow zones” without appropriate scheduling contingency measures continues to majorly inconvenience riders and further erode public trust in RTD, GDT requests that the agency carry out the following actions as soon as possible, with dates of execution clearly communicated to the public whenever possible:

1. Work with ATU 1001 to publish workable temporary schedules for the E, H, and R Lines which can reasonably be adhered to by operators. These schedules should be revised weekly and/or when “slow zones” are imposed or lifted.

2. Work with ATU 1001 to provide alternative methods of transportation for E, H, and R Line riders (e.g., bus bridges) to minimize adverse impacts on journey times.

3. Publish a schedule for all remaining inspections being carried out in the current quarter year cycle, which should be the first round being carried out, in accordance with APTA standard RT-FS-S-002-02, Rev. 1 and associated remedial works. This should include contingency dates for remedial works, should further defects be found during scheduled inspections.

4. Commit to 100% transparency with the public, including publishing all light rail-related incidents, inspection and remedial works going forward, as permissible.

5. Rescind communication restrictions that unnecessarily restrict staff and / or the Board of Directors from providing proper oversight, handling, and communications on this issue.

6. Respond fully to the questions earlier in this letter and also the Operations, Safety & Security Committee public comment letter sent in by GDT on Wednesday, June 12th, 2024. Please see a copy of said letter provided along with this submission for reference.

It may be the case that in order to best explain decisions or provide relevant information a face-to-face meeting is likely to have a greater chance of success. We are happy to accept and will gladly participate in this alternative.

Thank you,

James Flattum

Richard Bamber

CC: RTD Board of Directors
Dave Jensen, Assistant General Manager, Rail Operations

GREATER DENVER TRANSIT

greaterdenvertransit@gmail.com

Submitted as Public Comment to the
RTD Operations, Safety and Security Committee Meeting, June 12th, 2024.

June 12th, 2024

Troy Whitmore, RTD Operations, Safety and Security Committee Chair
Regional Transportation District
1660 Blake Street
Denver, CO 80202

Dear Chair Whitmore,

E and H Line "Slow Zones"

Greater Denver Transit (GDT) writes with concern regarding the batch of 10mph "slow zones" that were imposed en masse on the morning of Monday 3rd June. These "slow zones" have broken an already delicate E and H Line schedule imposed due to the Coping Panels project. While GDT appreciates the photos of "railhead burn" posted on the RTD website yesterday, the agency has failed to adequately explain the reasoning behind the sudden imposition of the "slow zones" or when riders can expect the problems to be resolved by.

As a severe operational issue, GDT hopes this committee shares our concerns regarding RTD's busiest light rail line and is of the opinion that anything less than full transparency risks further degrading the trust the traveling public still has in RTD. We would therefore like to seek responses to the following questions:

1. What exactly in the "enhanced inspection methodology" has prompted the imposition of the "slow zones"?

2. How does this "enhanced inspection methodology" differ from what was done in prior inspections?

3. Prior to conducting inspections with the "enhanced inspection methodology" did MoW staff believe that the result would likely be the wide scale imposition of "slow-zones".

4. On what timescale does the agency anticipate being able to return the track back to full line speed?

5. Are inspections on any other light rail lines planned?

Vision Zero

GDT has been notified that there will be a presentation on a proposal for RTD to adopt Vision Zero principles as part of the agency's strategic planning and wider leadership culture. As a stakeholder in the community-driven process that has led to this, GDT fully supports the initial recommendations being presented today and urges Directors to fully support adopting Vision Zero's systems driven principles throughout RTD.

Best Regards,

James Flattum
Greater Denver Transit

Richard Bamber
Greater Denver Transit

CC: RTD Board of Directors
Debra Johnson, RTD General Manager & CEO.

Memorandum

We make lives better through connections.

To: Jyotsna Vishwakarma PE, Chief Engineer

From: Kirk Strand PE, Engineering Services Manager

Date: May 10, 2023

Re: **CAP02-1122022 Evaluate Industry Track Standards**

This memo is written to address a commitment within Corrective Action Plan CAP02-1122022 to *"evaluate industry track standards, including Federal Railroad Administration (FRA) standards, to determine whether a more robust classification exists to document wear."*

Summary of Review

The current RTD MOW Track Safety Standards 2021 is a direct adaptation of the *APTA-RT-FS-S-002-02 Rail Transit Track Inspection and Maintenance* Standard, Revision 1, published in 2017. There is a *Review of Standards for Track Inspection and Maintenance (FTA Report No. 0215)* published in 2022. Industry practices were reviewed in a 2013 Transit Cooperative Research Program (*TCRP*) report, *Review of Rail Transit Track Inspection Practices*. This document has an Appendix E, that summarizes the comparison between APTA, FRA, and several other transit systems. **RTD's MOW Track safety standards are in line with other like agencies. A more formal prioritization method for repairs might be worth considering in the future for RTD's maintenance of track.**

Background

As shown in Appendix E, there are no significant differences in the limiting values between FRA, APTA, RTD or others. The Classification of Track is also standardized across the industry. All agencies in the cited reports use the same track classification system that adds a speed penalty as the track condition deteriorates. Some agencies separate the safety standard from the maintenance standard. RTD does not have a separate Track Maintenance Standard. As stated in the 2013 Report "some transit agencies have multiple maintenance limits referring to the urgency of repair (red, yellow, green, for example) that allow the transit agencies to prioritize maintenance.

Review

1. "Evaluate industry track standards including FRA standards," --Response: See Appendix E Track Standards the values are not significantly different.
2. "To determine whether a more robust classification method exists." --Response: No, track classes are standardized and based on reducing speed as track conditions worsen. There are not different methods.
3. "Document wear" --Response: The term "wear" in the railroad industry is usually in reference to rail wear. My assumption for this document is that "wear" as stated in the CAP, is being used as a euphemism for overall trackway condition. Otherwise, actual rail wear limits are addressed in the American Railway Engineering and Maintenance-of-Way Association (AREMA) manuals and generally accepted across the industry.

As stated above, there are two government publications that directly address the CAP topic. I have extracted some of the more pertinent info for your use.
The report referenced below is an evaluation of track standards and does include FRA.

1. FTA published Report No. 0215 (May 2022): Research Report and Findings: Review of Standards for Track Inspection and Maintenance. "This research was performed to determine the state of inspection and maintenance practices for rail transit agencies in the U.S. Project objectives included (1) performing an extensive literature review to summarize and compare current specifications and standards for rail transit track inspection and maintenance in the U. S. and other countries, including what is being used by agencies in the U.S., (2) performing a gap analysis to determine deficiencies in current standards, and (3) establishing recommendations to FTA for developing voluntary standards, protocols, guidelines, or recommended practices associated with rail transit track inspection and maintenance. A series of findings are presented."

   "There were two types of limits in the reviewed documents, and it is important to recognize the differences between them. Safety standards, also referred to as safety limits or intervention limits, are limits that, if surpassed, are considered safety and derailment risks by the controlling regulatory agency. Maintenance standards, also referred to as maintenance limits or alert limits, are typically stricter than safety limits. Transit agencies often use maintenance limits internally to ensure that no safety limits are ever exceeded, and regulatory or non-regulatory government agencies often use these as guidelines or recommendations for the transit agencies to follow. **Also, some transit agencies have multiple maintenance limits referring to the urgency of repair (red, yellow, green, for example) that allow the transit agencies to prioritize maintenance."**

AND

2. TCRP Synthesis 107 Rail Transit Inspection Practices: A Synthesis for Transit Practices (2013)

   This synthesis summarizes state-of-the-practice information on track inspection and maintenance standards and recommended safety practices, in an effort to assist all transit agencies in the development of their own set of track safety standards and, more importantly, maintenance standards. Since many transit agencies are not part of the national railroad system, and therefore not governed by federal inspection or maintenance practices, each agency must establish its own maintenance program to ensure that passengers are transported in a safe and reliable manner.

   "..minimum safety standards that are used, fewer than half (13) of the 29 agencies reported using FRA, a similar number **(14) use APTA**, two (2) agencies use California Public Utilities Commission, one (1) uses the FTA, and five reported having their own minimum safety standards. These standards are similar, and the table shows the similarities between APTA and the FRA. When asked if they had maintenance standards, 24 (83%) said they have their own, four (14%) agencies do not have maintenance standards, and five (17%) said that their maintenance standards are the same as the track safety standards. Twenty-one agencies, or about three-quarters(72%), have a priority system requiring speed restrictions if a defect is found, whereas the rest (28%) do not.

Appendix E: Compares the FRA, APTA and other systems.

APPENDIX E

APTA/FRA Track Safety Standards and Some Maintenance Standards

The following charts are based on reported maintenance standards. Each transit agency has its own maintenance standards and many use either APTA or the FRA for their safety standards. Maintenance standards and safety standards are not the same. The first column is the item number used as a reference number only. The second column is a brief description of the criteria used for maintenance. (See Appendix F for further explanation.)

The third column is the class of track. Each track class has an assigned maximum speed that trains may travel before the risk of a derailment is too great. The fourth column is the speeds assigned to the classes of track. Both APTA and FRA agree with respect to maximum passenger speed. The remainder of the columns represents minimum and maximum values of each individual transit authority.

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria																	
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
1	Variation from standard gage	1	15	-½	1½	-½	1½	-⅛	¾	-¼	¾	-½	1	-⅜	1	-½	1¼	-½	1	-⅛	1¼	-½	1½	-½	1
		2	30		1¼		1¼						⅞												
		3	60								½		⅝		⅝	-7/16	1	-⅜	¾	-⅛	1		1¼	-⅜	¾
		4	80		1		1						¼			-⅜	¾	-¼	½			-½			
		5	90																				1	-¼	½
2	Variation in alignment - 62' chord - Tangent	1	15		5		5		1	No Criteria			1		2		3		5	No Criteria			5		2¼
		2	30		3		3		¾				½		1½		2		3				3		1½
		3	60		1¾		1¾		½				¾		1¼		1½						1¾		
		4	80		1½		1½						0		1		1¼		1½				1½		1
		5	90		¾		¾								¾								¾		
3	Variation in alignment - 31', ( ) = 62' chord - Curve	1	15		3	N/A			⅝		1¼		1		(2)		2¼		(4)	1½	1½	N/A			1¼
		2	30			N/A					½		½		(1½)		1½		(2½)			N/A			1¼
		3	60		1¼		1¼		¼				¾		(1¼)		1			¾	¾		1		
		4	80		1		1				½		0		(¾)		¾		(1¼)				1		⅝
		5	90		½		½				¼				(½)								½		
4	High Water ( ) = Height above base of Rail	1	15		Head	No Criteria		No Criteria			Head		6½	No Criteria			Head	No Criteria			Head	No Criteria		No Criteria	
		2	30		Web						Web		5				Web				Web				
		3	60										1¼												
		4	80		Base						Base		0				Base				Base				
		5	90										0												
5	Runoff in 31'	1	15		3½		3½		1½		3½	No Criteria			1½		1½		3		3		3½"		2½
		2	30		3		3		1		2				1				2½		2		3		1½
		3	60		2		2		½						1		1½						2		
		4	80		1½		1½				1				¾				1½				1½		1¼
		5	90		1		1								½								1		
6	Surface Deviation 62' Chord	1	15		3		3		1½	No Criteria		No Criteria			2		3		2¾		2¾		3		2½
		2	30		2¾		2¾		1						1½		2¾		2¼				2¾		2
		3	60		2¼		2¼		¾						1		2¼				2¼		2¼		
		4	80		2		2								¾		2		1¾				2		1⅜
		5	90		1¼		1¼								⅝								1¼		
7	Surface Deviation 31' Chord	1	15		1	No Criteria		No Criteria			¾		2	No Criteria			1	No Criteria			1¼	No Criteria		No Criteria	
		2	30		¾						9/16		1¼				¾								
		3	60		½								⅞				½				1¼				
		4	80		⅜						¼		½				⅜								
		5	90		¼																				

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria																	
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
8	Deviation from 0 cross-level in 62'	1	15		3		3		1		3		1½		2		3		2½		2		3		1⅞
		2	30		2		2		¾		1¾		¾		1¾		2		1¾		1¾		2		1¼
		3	60		1¾		1¾		½				½		1¼		1¾						1¾		
		4	80		1¼		1¼				1		1		1		1¼		1¼				1¼		1⅛
		5	90		1		1						¼		¾								1		
9	Deviation from theoretical cross-level in 62', ( ) = 31' chord in spirals	1	15		2	No Criteria		No Criteria		No Criteria			1¼	No Criteria			2		(1¾)		1½	No Criteria			(1½)
		2	30		1¾								⅞				1¾		(1½)						
		3	60		1½								½				1½				1¼				(1⅛)
		4	80		1														(1)						
		5	90		¾								¼				1								(⅞)
10	Warp/Twist in 62'	1	15		3		3		1¼	No Criteria		No Criteria			2		3		2½		2		3		2⅛
		2	30		2¼		2¼		1						1¾		2¼		1¾				2¼		1¾
		3	60		2		2								1¼		2				1¾		2		
		4	80		1¾		1¾		⅝						1				1¼				1¾		1⅝
		5	90		1½		1½								¾		1¾						1½		
11	Warp/Twist in 31'	1	15		2		2	No Criteria		No Criteria		No Criteria		No Criteria			2	No Criteria			2		2	No Criteria	
		2	30		1¾		1¾										1¾				1¾		1¾		
		3	60		1½		1¼										1½				1½		1¼		
		4	80		1¼		1														1¼		1		
		5	90		1		¾										1¼				1		¾		
12	Non-Defective Ties or fasteners in 39', ( ) = 62', [ ] = out of 10, { } = 100'	1	15	6		5		14		6		(16)		[4]		14		5		6		5		5	
		2	30	8		8				8		(18)		[6]		11		8		8		8		8	
		3	60					16				(20)													
		4	80	12		12				15		(22)		[7]		7		9		12		12		8	
		5	90																						
13	Non-Defective Ties in 39', ( ) = 62'for greater than 2° curves	1	15	No Criteria		6		14		6		(16)		No Criteria		13		6		No Criteria		6		6	
		2	30			9				9		(18)				10		9				9		9	
		3	60			10		16				(20)				9						10			
		4	80			14				21		(22)				5		11				14		10	
		5	90																						
14	Maximum defective ties or fasteners in a row for > 2000'R, ( ) = distance in inches	1	15		5	No Criteria			3		3		5		4		5		4		5	No Criteria			4
		2	30										4						3						3
		3	60		4						2		3		3		4				4				
		4	80		3				2				2				3		2		3				2
		5	90																						

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria															
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
15	Maximum defective ties or fasteners in a row for Radius between 1000' and 2000'. ( ) = distance in inches	1	15		4	No Criteria			3		2		4		3		4	No Criteria			4	No Criteria		No Criteria	
		2	30										3												
		3	60		3						1		3				3				3				
		4	80						2						2										
		5	90		2								2				2				2				
16	Maximum defective ties or fasteners in a row for R < 1000'. ( ) = distance in inches	1	15		3	No Criteria			3		2		4		2		3		3		3	No Criteria			3
		2	30										3												2
		3	60		2						1		3				2				2				2
		4	80						2						1										
		5	90		1								2				1		1		1				1
17	Quarter Cracked joint bars with bolts loose	1	15	N/A		N/A		Replace in 30 days		Replace		Replace		No Criteria		N/A		N/A		N/A		N/A		N/A	
		2	30																						
		3	60	Replace		Replace										Replace		Replace		Replace		Replace		Replace	
		4	80																						
		5	90																						
18	Center cracked joint bars			Replace		Replace		Replace Immediate		Replace Immediate		Replace Immediate		No Criteria		Replace		Replace		Replace		Replace		Replace	
19	Less than 2 bolts per rail, Classes 2-5 and 1 bolt per rail for Class 1			Install		Install		Install		Install		Install		Install		Install		Install		Install		Install		Install	
20	In CWR at least 2 bolts per rail			Install		Install		Install		Install		Install		Install		Install		Install		Install		Install		Install	
21	Torch cut holes or torch cut rail	1	15	N/A		N/A		No Criteria		Not Permitted		Not Permitted		Not Permitted		N/A		N/A		N/A		N/A		N/A	
		2	30																						
		3	60	Replace Rail		Replace Rail										Replace Rail		Replace Rail		Replace Rail		Replace Rail		Replace Rail	
		4	80																						
		5	90																						
22	Number of ties within 24" of the center of a joint	1	15	1		1		1 within 12"		1 within 24"		No Criteria		No Criteria		1		1		1		1		1	
		2	30																						
		3	60	2		2				1 within 18"						2		2		2		2		2	
		4	80																						
		5	90																						

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria															
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
23	Reconfigure joint bars with a torch.	1	15	OK		OK		No Criteria		Not Permitted		Not Permitted		Not Permitted		OK		OK		OK		OK		OK	
		2	30																						
		3	60	No		No										No		No		No		No		No	
		4	80																						
		5	90																						
24	Tread Mis-Match	1	15		¼		¼		¼		¼	No Criteria			3/16		¼		⅜		¼		¼		⅜
		2	30						3/16		3/16														¼
		3	60		3/16		3/16								⅛		3/16		¼		3/16		3/16		
		4	80		⅛		⅛		⅛		⅛				1/16		⅛		⅛		⅛		⅛		⅛
		5	90																						
25	Gage Face Mis-Match	1	15		¼		¼		3/16		¼	No Criteria			⅛		¼		¼		¼		¼		¼
		2	30		3/16		3/16				3/16						3/16		3/16		3/16		3/16		3/16
		3	60																						
		4	80		⅛		⅛		⅛		⅛				1/16		⅛		⅛		⅛		⅛		⅛
		5	90																						
26	Rail end batter	1	15		½		½		3/16		½	No Criteria			¼		½		⅜		½		½		⅜
		2	30		¼		¼				¼						¼		¼		¼		¼		¼
		3	60		3/16		3/16		⅛						3/16		3/16		¼		3/16		3/16		
		4	80		⅛		⅛				⅛				⅛		⅛		⅛		⅛		⅛		⅛
		5	90		1/16		1/16								1/16						1/16		1/16		
27	Restraining Rail Flangeway ( ) = from design	1	15	1½		1½		No Criteria		1½	3	No Criteria		1½		No Criteria		(-⅜)	(⅜)	1½		1½			2⅛
		2	30																						
		3	60							1¾	2¾							(-¼)	(¼)						1⅞
		4	80																						
		5	90															(-⅛)	(⅛)						1¾
28	Double guard face gage with restraining rail on both running rails.	1	15		+½	No Criteria		No Criteria				No Criteria		No Criteria		No Criteria		No Criteria			+½	No Criteria			2
		2	30																						
		3	60		+⅜						⅜										+7/16				1¾
		4	80																						
		5	90		+¼																+¼				1⅞
29	Frog Flangeways	1	15	1½		1½		1¾	2	No Criteria		No Criteria		1½		1½		1½		1½		1½		1¼	
		2	30																						
		3	60																						
		4	80																						
		5	90																						

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria																	
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
30	Minimum flangeway depth in a frog	1	15	1⅜		1⅜				1⅜						1⅜				1⅜		1⅜			
		2	30																						
		3	60	1½		1½		1½		1½		No Criteria		1½		1½		1½		1½		1½		No Criteria Flange Bearing	
		4	80																						
		5	90																						
31	Tread Wear on Frog	1	15										⅝												
		2	30										½												
		3	60		⅜		⅜	No Criteria		No Criteria			⅜		⅜		⅜		⅜		⅜		⅜		⅜
		4	80										¼												
		5	90																						
32	Guard Check Gage	1	15	-½		-½						-½		-⅞		-⅜		-½				-½		-½	
		2	30	-⅜		-⅜						-⅜				-¼						-⅜			
		3	60					-⅛	⅜	-¼		-¼		-¼				-⅜		-⅛				-⅜	
		4	80	-¼		-¼						-¼				-⅛						-¼			
		5	90	-⅛		-⅛						-⅛		-⅛				-⅛				-⅛		-⅛	
33	Guard Face Gage	1	15		½		½						½		½		½		½				½		
		2	30														⅜								
		3	60		⅜		⅜	-⅛	¼		¼		⅜		¼				⅜		⅛		⅜	No Criteria	
		4	80														¼								
		5	90		¼		¼						¼						¼				¼		
34	Frequency of Hi-Rail or walking inspection on Mainline/Siding Track	Excepted		Weekly		Monthly		Weekly		Twice Weekly		Monthly		Monthly		Twice Weekly		Twice Weekly		Twice per Month		Weekly		Twice Weekly	
		1	15			Weekly																			
		2	30																						
		3	60																						
		4	80			Twice Weekly																			
		5	90																						
35	Frequency of Gage Restraint (GRMS) Testing on Mainline	>2MGT,>30mph Pass.		No Criteria		Annually		No		No		No		No		No		No		No		No		No	
		<2MGT,<30mph Pass.				24 months																			
36	Frequency of Geometry Car Testing on Mainline			Once per year		No Criteria		3 times per Year		3 times per year		Every 2 years		Twice per year		Twice per year		4 times per year		Once per Year		Once per Year		Once per Year	

Item	Description of Defect	Class of Track	Max passenger speed in mph APTA and FRA	APTA		FRA		Agency Maintenance Criteria																	
								A		B		C		D		E		F		G		I		J	
				Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In	Min In	Max In
37	Frequency of Rail Flaw Detection Testing on Mainline	1	15	Once per year		Once/30mgt Once/year, whichever longest		Twice per Year		6 times per year		Once per Year		Twice per year		Twice per year		Twice per year		Once per Year		Once per Year		Once per Year	
		2	30																						
		3	60			Once/40mgt Once/year, whichever shortest																			
		4	80																						
		5	90																						
38	Rail Wear Limits (Gage - Top)	1	15	No Criteria		No Criteria		⅝	⅝	7/16	½	⅞	1	⅝	½	⅝	5/16	⅞	⅝	No Criteria		No Criteria		⅞	½
		2	30									⅝	⅞			½	¼	¾	½						
		3	60									½	⅝												
		4	80									⅜	½			7/16	1/16	½	⅜						
		5	90																						
39	CWR Plan (Yes or No)			Yes		Yes		Yes		Yes		No		Yes		Yes		Yes		No		Yes		No	
40	3rd Rail Inspection			No Criteria		No Criteria		1/Year																	
	Max 3rd Rail Wear							⅝		¾															
	3rd Rail Gage																	-½	½						
	Max Speed in mph							>60		55		60		>60		>60		45		45		>60		50	

Min In = Minimum requirement in inches

Max In = Maximum requirement in inches

If description requirement states unit in hole number then applies

APTA is the American Public Transportation Association, FRA is the Federal Railroad Administration

Agency maintenance criteria is listed as Agency A, B, C etc to maintain aninimity

Classes of track and related speeds may vary slightly among Transit Agencies. Speeds are shown as APTA and FRA limits.

See Appendix F for definitions of criteria

9 Transit Agencies are shown which represents those agencies that willingly submitted their Maintenance Criteria.