

Appendix A, Table 1 - Three-Inch Unbalance Table													
Degree of Curvature	Elevation in Inches												
	0	1/2	1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6
	Maximum allowable operating speed (m.p.h.)												
0°30'	93	100	107	113	120	125	131	136	141	146	151	156	160
0°40'	80	87	93	98	103	109	113	118	122	127	131	135	139
0°50'	72	78	83	88	93	97	101	106	110	113	117	121	124
1°00'	66	71	76	80	85	89	93	96	100	104	107	110	113
1°15'	59	63	68	72	76	79	83	86	89	93	96	99	101
1°30'	54	58	62	66	69	72	76	79	82	85	87	90	93
1°45'	50	54	57	61	64	67	70	73	76	78	81	83	86
2°00'	46	50	54	57	60	63	66	68	71	73	76	78	80
2°15'	44	47	50	54	56	59	62	64	67	69	71	74	76
2°30'	41	45	48	51	54	56	59	61	63	66	68	70	72
2°45'	40	43	46	48	51	54	56	58	60	62	65	66	68
3°00'	38	41	44	46	49	51	54	56	58	60	62	64	66
3°15'	36	39	42	45	47	49	51	54	56	57	59	61	63
3°30'	35	38	40	43	45	47	50	52	54	55	57	59	61
3°45'	34	37	39	41	44	46	48	50	52	54	55	57	59
4°00'	33	35	38	40	42	44	46	48	50	52	54	55	57
4°30'	31	33	36	38	40	42	44	45	47	49	50	52	54
5°00'	29	32	34	36	38	40	41	43	45	46	48	49	51
5°30'	28	30	32	34	36	38	40	41	43	44	46	47	48
6°00'	27	29	31	33	35	36	38	39	41	42	44	45	46
6°30'	26	28	30	31	33	35	36	38	39	41	42	43	45
7°00'	25	27	29	30	32	34	35	36	38	39	40	42	43
8°00'	23	25	27	28	30	31	33	34	35	37	38	39	40
9°00'	22	24	25	27	28	30	31	32	33	35	36	37	38
10°00'	21	22	24	25	27	28	29	31	32	33	34	35	36
11°00'	20	21	23	24	26	27	28	29	30	31	32	33	34
12°00'	19	20	22	23	24	26	27	28	29	30	31	32	33

Appendix A, Table 2 - Four-Inch Unbalance Table													
Degree of Curvature	Elevation in Inches												
	0	1/2	1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6
	Maximum allowable operating speed (m.p.h.)												
0°30'	107	113	120	125	131	136	141	146	151	156	160	165	169
0°40'	93	98	104	109	113	118	122	127	131	135	139	143	146
0°50'	83	88	93	97	101	106	110	113	117	121	124	128	131
1°00'	76	80	85	89	93	96	100	104	107	110	113	116	120
1°15'	68	72	76	79	83	86	89	93	96	99	101	104	107
1°30'	62	65	69	72	76	79	82	85	87	90	93	95	98
1°45'	57	61	64	67	70	73	76	78	81	83	86	88	90
2°00'	53	57	60	63	65	68	71	73	76	78	80	82	85
2°15'	50	53	56	59	62	64	67	69	71	73	76	78	80
2°30'	48	51	53	56	59	61	63	65	68	70	72	74	76
2°45'	46	48	51	53	56	58	60	62	64	66	68	70	72
3°00'	44	46	49	51	53	56	58	60	62	64	65	67	69
3°15'	42	44	47	49	51	53	55	57	59	61	63	65	66
3°30'	40	43	45	47	49	52	54	56	57	59	61	62	64
3°45'	39	41	44	46	48	50	52	53	55	57	59	60	62
4°00'	38	40	42	44	46	48	50	52	53	55	57	58	60
4°30'	36	38	40	42	44	45	47	49	50	52	53	55	56
5°00'	34	46	38	40	41	43	45	46	48	49	51	52	53
5°30'	32	34	36	38	39	41	43	44	46	47	48	50	51
6°00'	31	33	35	36	38	39	41	42	44	45	46	48	49
6°30'	30	31	33	35	36	38	39	41	42	43	44	46	47
7°00'	29	30	32	34	35	36	38	39	40	42	43	44	45
8°00'	27	28	30	31	33	34	35	37	38	39	40	41	42
9°00'	25	27	28	30	31	32	33	35	36	37	38	39	40
10°00'	24	25	27	28	29	30	32	33	34	35	36	37	38
11°00'	23	24	25	27	28	29	30	31	32	33	34	35	36
12°00'	22	23	24	26	27	28	29	30	31	32	33	34	35

Appendix B, Table 1 - Top 20 Track Causes of Derailments Main Tracks 1995 through 2000			
Cause	Count	Percent	Damage
Wide gage(defective/missing crossties)	207	11.1	14,580,525
Track alignment irreg(buckled/sunkink)	173	9.2	47,110,448
Transverse/compound fissure	156	8.3	44,233,342
Cross level track irreg.(not at joints)	120	6.4	15,153,594
Cross level of track irregular(joints)	114	6.1	11,008,549
Detail fracture - shelling/head check	108	5.8	41,643,178
Broken base of rail	98	5.2	28,083,420
Vertical split head	89	4.8	23,033,089
Switch point worn or broken	86	4.6	4,891,217
Roadbed settled or soft	75	4	13,289,480
Head and web sep(outside jt bar limit)	63	3.4	13,113,570
Other rail and joint bar defects	57	3	20,381,752
Trk alignmnt irreg-not buckled/sunkink	39	2.1	7,454,822
Joint bar broken (noninsulated)	34	1.8	19,216,520
Worn rail	31	1.7	5,329,433
Wide gage(spikes/other rail fasteners)	30	1.6	2,988,484
Other track geometry defects	29	1.5	2,551,601
Washout/rain/slide/etc. dmg -track	28	1.5	8,293,803
Superelevation improper, excessive,etc.	27	1.4	4,260,246
Broken weld (field)	26	1.4	16,371,956

Appendix B, Table 2 - Top 20 Track Causes of Derailments Yard Tracks 1995 through 2000			
Cause	Count	Percent	Damage
Wide gage(defective/missing crossties)	577	24	20,304,757
Switch point worn or broken	323	13.4	7,509,303
Broken base of rail	150	6.2	6,944,763
Switch damaged or out of adjustment	148	6.1	3,981,856
Transverse/compound fissure	125	5.2	5,224,571
Switch pt gap(btwn swt pt & stock rail)	106	4.4	2,927,237
Wide gage(spikes/other rail fasteners)	76	3.2	2,529,314
Head and web sep(outside jt bar limit)	76	3.2	2,773,009
T221- Vertical split head	73	3	3,031,659
T399- Oth frog, switch, trk appliance defect	56	2.3	1,477,332
T102- Cross level track irreg.(not at joints)	47	2	1,437,276
T207- Detail fracture - shelling/head check	43	1.8	1,778,465
T113- Wide gage (due to worn rails)	41	1.7	1,295,734
T299- Other rail and joint bar defects	41	1.7	933,455
T001- Roadbed settled or soft	38	1.6	1,383,367
T101- Cross level of track irregular(joints)	37	1.5	1,166,184
T199- Other track geometry defects	36	1.5	1,715,061
T205- Defective or missing crossties	33	1.4	1,083,138
T222- Worn rail	26	1.1	605,923
T305- Retarder worn, broken, malfunctioning	24	1	498,101

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
4.01	Excepted track segment not identified in appropriate record.	x										
4.02	Excepted track segment located within 30 feet of an adjacent track subject to simultaneous operation at speeds in excess of 10 mph.		x									
4.03	Excepted track not inspected in accordance with §213.233(c) and 213.235 as specified for Class 1 track.		x									
4.04	Train speed exceeds 10 mph on excepted track.		x									
4.05	Occupied passenger train operated on excepted track.		x									
4.06	Freight train operated on excepted track with more than five cars required to be placarded in accordance with 49 CFR Part 172.		x									
4.07	Train with a car required to be placarded by 49 CFR Part 172 operated over excepted track within 100 feet of a bridge or in a public street or highway.		x									
4.08	Failure to notify FRA of removal of trackage from excepted status.	x										
7.01	No written record of names of qualified persons to supervise restorations and renewals of track under traffic and/or to inspect track for defects, or to pass trains over broken rails or pull-aparts.	x										
7.02	Failure of track owner to provide written authorization to qualified designated individuals.	x										
7.03	Failure to use qualified person to pass trains over broken rails or pull aparts.		x	x	x	x	x	x				
7.04	Train speed exceeds 10 m.p.h. over broken rails or pull aparts.		x	x	x	x	x	x				
7.05	Failure to promptly notify and dispatch person fully qualified under §213.7 to the location of the broken rail or pull apart.			x	x	x	x	x				
9.01	Failure to restore other than excepted track to compliance with Class 1 stds. within 30 days after a person designated under §213.7(a) has determined that operations may safely continue over defect(s) not meeting Class 1 or excepted track stds.			x	x	x	x	x				
9.02	Failure of track owner to enforce, over Class 1 defects, the limiting conditions imposed by person designated under §213.7(a).		x									
9.03	Reserved.											
11.01	Proper qualified supervision not provided at work site during work hours when track is being restored or renewed under traffic conditions.		x	x	x	x	x	x				
33.01	Drainage or water-carrying facility not maintained.			x	x	x	x	x				
33.02	Drainage or water-carrying facility obstructed by debris.			x	x	x	x	x				
33.03	Drainage or water-carrying facility collapsed.			x	x	x	x	x				
33.04	Drainage or water-carrying facility obstructed by vegetation.			x	x	x	x	x				
33.05	Drainage or water-carrying facility obstructed by silting.			x	x	x	x	x				

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83.06	Drainage or water-carrying facility deteriorated to allow subgrade saturation.			x	x	x	x	x				
83.07	Uncontrolled water undercutting track structure or embankment.			x	x	x	x	x				
87.01	Combustible vegetation around track-carrying structures.			x	x	x	x	x				
87.02	Vegetation obstructs visibility of railroad signs and fixed signals.			x	x	x	x	x				
87.03	Vegetation obstructs passing of day and night signals by railroad employees.			x	x	x	x	x				
87.04	Vegetation interferes with railroad employees performing normal trackside duties.			x	x	x	x	x				
87.05	Vegetation prevents proper functioning of signal and/or communication lines.			x	x	x	x	x				
87.06	Excessive vegetation at train order office, depot, interlocking plant, a carman's building, etc., prevents employees on duty from visually inspecting moving equipment when their duties so require.			x	x	x	x	x				
87.07	Excessive vegetation at train meeting points prevents proper inspection of moving equipment by railroad employees.			x	x	x	x	x				
87.08	Excessive vegetation in toepaths and around switches where employees are performing normal trackside duties.			x	x	x	x	x				
87.09	Vegetation brushing sides of rolling stock.			x	x	x	x	x				
87.10	Vegetation obstructs visibility of grade crossing warning signs and signals by the traveling public.			x	x	x	x	x				
53.01	Gage dimension exceeds allowable on tangent track.			x	x	x	x	x				
53.02	Gage dimension is less than allowable on tangent track.			x	x	x	x	x				
53.03	Gage dimension exceeds allowable on curved track.			x	x	x	x	x				
53.04	Gage dimension is less than allowable on curved track.			x	x	x	x	x				
53.05	Gage dimension exceeds allowable for excepted track.		x									
55.01	Alinement deviation of tangent track exceeds allowable.			x	x	x	x	x				
55.02	Alinement deviation of curved track exceeds allowable for a 62-foot chord.			x	x	x	x	x				
55.03	Alinement deviation of curved track exceeds allowable for a 31-foot chord.			x	x	x	x	x				
57.01	Reserved											
57.02	Operating speed exceeds allowable for 3-inches of unbalance, based on curvature and elevation.			x	x	x	x	x				
57.03	Operating speed exceeds allowable for 4-inches of unbalance, based on curvature and elevation.			x	x	x	x	x				
57.04	Operating speed exceeds allowable for a FRA approved unbalance based on curvature and elevation approved for track contiguous to high speed track.			x	x	x	x	x				
57.05	Reserved											
57.06	Maximum crosslevel on curve exceeds allowable.			x	x	x	x	x				

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Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
63.01	Runoff in any 31-feet of rail at end of raise exceeds allowable.			x	x	x	x	x				
63.02	Deviation from uniform profile on either rail exceeds allowable.			x	x	x	x	x				
63.03	Reserved											
63.04	Reserved.											
63.05	Deviation from zero crosslevel at any point on tangent exceeds allowable.			x	x	x	x	x				
63.06	Reserved											
63.07	Difference in crosslevel between any two points less than 62-feet apart on tangents exceeds allowable.			x	x	x	x	x				
63.08	Difference in crosslevel between any two points less than 62-feet apart on curves between spirals exceeds allowable.			x	x	x	x	x				
63.09	Difference in crosslevel between any two points less than 62-feet apart on spirals exceeds allowable.			x	x	x	x	x				
63.10	Reverse elevation on curve exceeds allowable.			x	x	x	x	x				
63.11	Variation in crosslevel per 31-feet exceeds allowable on restricted length spiral.			x	x	x	x	x				
63.12	Difference in crosslevel within 62-feet between a point on a curve that equals or exceeds 6-inches and a point with greater elevation exceed allowable.			x	x	x	x	x				
63.13	Crosslevel differences for six or more consecutive pairs of staggered joints exceeds allowable.			x	x	x	x	x				
103.01	Insufficient Ballast			x	x	x	x	x				
103.02	Fouled Ballast			x	x	x	x	x				
109.01	Reserved											
109.02	No effective support ties within the prescribed distance from a joint.			x	x	x	x	x				
109.03	Crossties not effectively distributed to support a 39-foot segment of track.			x	x	x	x	x				
109.04	Fewer than minimum allowable number of non-defective ties per 39 feet for tangent and curved track less than 2 degrees. [used after 09/21/00]			x	x	x	x	x				
109.05	Fewer than minimum allowable number of non-defective ties per 39 feet for turnouts and curved track over 2 degrees. [used after 09/21/00]			x	x	x	x	x				
109.06	Track constructed without crossties does not effectively support track structure.			x	x	x	x	x				
110.01	Failure to notify FRA at least 30 days prior to the designation of a GRMS line segment.			x	x	x	x	x				
110.02	Failure to notify FRA at least 10 days prior to the removal of a line segment from GRMS designation.			x	x	x	x	x				
110.03	Failure to provide required information identifying a GRMS line segment.			x	x	x	x	x				
110.04	Failure to provide sufficient technical data to establish compliance with minimum GRMS design requirements.			x	x	x	x	x				
110.05	Failure to maintain and operate GRMS within minimum design requirements over designated GRMS line segments.			x	x	x	x	x				

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Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
110.06	Failure of GRMS to provide analog trace of specified parameters			x	x	x	x	x				
110.07	Failure of GRMS to provide exception report listing of specified parameters.			x	x	x	x	x				
110.08	Failure to provide exception report listing to § 213.7 individual prior to next inspection required under § 213.233.			x	x	x	x	x				
110.09	Failure to maintain and make available documented calibration procedures on GRMS vehicle.			x	x	x	x	x				
110.10	Failure to initiate a daily instrument verification procedure.			x	x	x	x	x				
110.11	Failure to maintain PTLF accuracy within five-percent of 4,000-pound reading.			x	x	x	x	x				
110.12	Failure to make available GRMS training program.			x	x	x	x	x				
110.13	Failure of GRMS training program to meet minimum requirements.			x	x	x	x	x				
110.14	Failure to provide GRMS training to § 213.7 individual whose territory is subject to requirements of § 213.110.			x	x	x	x	x				
110.15	Failure to initiate required remedial action for exceptions listed on GRMS record of lateral restraint.			X	x	x	x	x				
110.16	Gage widening exceeds allowable measured with PTLF.			x	x	x	x	x				
110.17	Failure to provide functional PTLF to § 213.7 individual whose territory is subject to requirements of § 213.110.			x	x	x	x	x				
110.18	Failure to restore contact between rail and lateral rail restraint components			x	x	x	x	x				
110.19	Failure to keep GRMS records as required.			x	x	x	x	x				
110.20	Failure to conduct GRMS inspections at required frequency.			x	x	x	x	x				
113.01	Transverse Fissure			x	x	x	x	x				
113.02	Compound Fissure			x	x	x	x	x				
113.03	Horizontal Split Head			x	x	x	x	x				
113.04	Vertical Split Head			x	x	x	x	x				
113.05	Split Web			x	x	x	x	x				
113.06	Piped Rail			x	x	x	x	x				
113.07	Bolt-Hole Crack			x	x	x	x	x				
113.08	Head Web Separation			x	x	x	x	x				
113.09	Broken Base			x	x	x	x	x				
113.10	Detail Fracture			x	x	x	x	x				
113.11	Engine Burn Fracture			x	x	x	x	x				
113.12	Ordinary Break			x	x	x	x	x				
113.13	Broken or Defective Weld			x	x	x	x	x				
113.14	Damaged Rail			x	x	x	x	x				
113.15	Flattened Rail			x	x	x	x	x				
115.01	Rail-end mismatch on tread of rail exceeds allowable.			x	x	x	x	x				
115.02	Rail-end mismatch on gage side of rail exceeds allowable.			x	x	x	x	x				
119.01	Failure of track owner to develop and implement written CWR procedures.			x	x	x	x	x				

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Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
119.02	Failure to comply with written CWR procedures.			X	X	X	X	X				
119.03	Failure of track owner to develop a training program for the implementation of their written CWR procedures.			X	X	X	X	X				
119.04	Failure to keep CWR records as required.			X	X	X	X	X				
121.01	Rail joint not of structurally sound design and dimension.			X	X	X	X	X				
121.02	Cracked or broken joint bar in Classes 3 through 5 track (other than center-break).			X	X	X	X	X				
121.03	Center cracked or broken joint bar.			X	X	X	X	X				
121.04	Worn joint bar allows excessive vertical movement of rail in joint in Classes 3 through 5 track.			X	X	X	X	X				
121.05	Less than 2 bolts per rail at each joint for conventional jointed rail in Classes 2 through 5 track.			X	X	X	X	X				
121.06	Less than 1 bolt per rail at each joint for conventional jointed rail in Class 1 track.			X	X	X	X	X				
121.07	Less than 2 bolts per rail at any joint in continuous welded rail.			X	X	X	X	X				
121.08	Loose joint bars.			X	X	X	X	X				
121.09	Torch-cut or burned-bolt hole in rail in Classes 2 through 5 track.			X	X	X	X	X				
121.10	Joint bar reconfigured by torch cutting in Classes 3 through 5 track.			X	X	X	X	X				
122.01	Torch cut rail applied in Class 3 through 5 track for other than emergency.			X	X	X	X	X				
122.02	Failure to remove torch cut rails within specified time frame.			X	X	X	X	X				
122.03	Failure to remove non-inventoried torch cut rail within 30 days of discovery.			X	X	X	X	X				
122.04	Train speed exceeds allowable over non-inventoried torch cut rail.			X	X	X	X	X				
123.01	Insufficient tie plates in Class 3 through 5 track.			X	X	X	X	X				
123.02	Object between base of rail and the bearing surface of the tie plate causing concentrated load.			X	X	X	X	X				
127.01	Insufficient fasteners in a 39-foot track segment.			X	X	X	X	X				
133.01	Loose, worn, or missing switch clips.			X	X	X	X	X				
133.02	Loose, worn, or missing clip bolts (transit, side jaw, eccentric, vertical).			X	X	X	X	X				
133.03	Loose, worn, or defective connecting rod.			X	X	X	X	X				
133.04	Loose, worn, or defective connecting rod fastening.			X	X	X	X	X				
133.05	Loose, worn, or defective switch rod.			X	X	X	X	X				
133.06	Loose, worn, or missing switch rod bolts.			X	X	X	X	X				
133.07	Worn or missing cotter pins.			X	X	X	X	X				
133.08	Loose or missing rigid rail braces.			X	X	X	X	X				
133.09	Loose or missing adjustable rail braces.			X	X	X	X	X				
133.10	Missing switch, frog, or guard rail plates.			X	X	X	X	X				
133.11	Loose or missing switch point stops.			X	X	X	X	X				
133.12	Loose, worn, or missing frog bolts.			X	X	X	X	X				
133.13	Loose, worn, or missing guard rail bolts.			X	X	X	X	X				
133.14	Loose, worn or missing guard rail clamps, wedge, separator block, or end block.			X	X	X	X	X				

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
133.15	Obstruction between switch point and stock rail.			X	X	X	X	X				
133.16	Obstruction in flangeway of frog.			X	X	X	X	X				
133.17	Obstruction in flangeway of guard rail.			X	X	X	X	X				
133.18	Insufficient anchorage to restrain rail movement.			X	X	X	X	X				
133.19	Flangeway less than 1 1/2 inches wide.			X	X	X	X	X				
135.01	Stock rail not securely seated in switch plates.			X	X	X	X	X				
135.02	Stock rail canted by overtightening rail braces.			X	X	X	X	X				
135.03	Improper fit between switch point and stock rail.			X	X	X	X	X				
135.04	Outer edge of wheel contacting gage side of stock rail.			X	X	X	X	X				
135.05	Excessive lateral or vertical movement of switch point.			X	X	X	X	X				
135.06	Heel of switch insecure.			X	X	X	X	X				
135.07	Insecure switch stand or switch machine.			X	X	X	X	X				
135.08	Insecure connecting rod.			X	X	X	X	X				
135.09	Throw lever operable with switch lock or keeper in place.			X	X	X	X	X				
135.10	Switch position indicator not clearly visible.			X	X	X	X	X				
135.11	Unusually chipped or worn switch point.			X	X	X	X	X				
135.12	Improper switch closure due to metal flow.			X	X	X	X	X				
135.13	Use of tongue and plane mate where speeds exceed class one			X	X	X	X	X				
137.01	Insufficient flangeway depth.			X	X	X	X	X				
137.02	Frog point chipped, broken, or worn in excess of allowable.			X	X	X	X	X				
137.03	Tread portion of frog worn in excess of allowable.			X	X	X	X	X				
137.04	Use of flange bearing frog where speed exceeds that permitted by Class 1.			X	X	X	X	X				
137.99	Severe frog condition not otherwise provided.			X	X	X	X	X				
139.01	Outer edge of wheel contacting side of spring wing rail.			X	X	X	X	X				
139.02	Toe of wing rail not fully bolted and tight.			X	X	X	X	X				
139.03	Ties under or wing rail not solidly tamped.			X	X	X	X	X				
139.04	Bolt-hole defect in frog.			X	X	X	X	X				
139.05	Head and web separation in frog.			X	X	X	X	X				
139.06	Insufficient tension in spring to hold wing rail against point rail.			X	X	X	X	X				
139.07	Excessive clearance between hold-down housing and horn.			X	X	X	X	X				
141.01	Raised guard worn excessively.			X	X	X	X	X				
141.02	Frog point rebuilt before restoring guarding face.			X	X	X	X	X				
143.01	Guard check gage less than allowable.			X	X	X	X	X				
143.02	Guard face gage exceeds allowable.			X	X	X	X	X				
143.03	Cracked or broken guard rail.			X	X	X	X	X				
205.01	Derail not clearly visible.			X	X	X	X	X				
205.02	Derail operable when locked.			X	X	X	X	X				
205.03	Reserved			X	X	X	X	X				
205.04	Improper size derail.			X	X	X	X	X				
205.05	Improperly installed derail.			X	X	X	X	X				
205.06	Loose, worn, or defective parts of derail.			X	X	X	X	X				

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
233.01	Track inspected by other than qualified designated individual.			x	x	x	x	x				
233.02	Track being inspected at excessive speed.		x	x	x	x	x	x				
233.03	Failure to inspect at required frequency.	x										
233.04	Failure to initiate remedial action for deviations found.	x	x	x	x	x	x	x				
233.05	One Inspector inspecting more than two tracks.	x	x	x	x	x	x	x				
233.06	Two Inspectors inspecting more than four tracks.	x	x	x	x	x	x	x				
233.07	Inspection performed on track outside of maximum allowable track center distances.	x	x	x	x	x	x	x				
233.08	Main track not traversed within the required frequency.	x										
233.09	Siding track not traversed within the required frequency.	x										
235.01	Failure to inspect turnouts at required frequency.	x										
235.02	Failure to inspect track crossings at required frequency.	x										
235.03	Failure to inspect lift rail assemblies or other transition devices on moveable bridges at required frequency	x										
235.04	Failure to operate specified switches in Classes 3 through 5.	x										
237.01	Failure to inspect rail for internal defects at required frequency.	x										
237.02	Failure of equipment to inspect rail at joints.			x	x	x	x	x				
237.03	Defective rail not marked properly.			x	x	x	x	x				
237.04	Failure to reduce operating speed until valid rail inspection is performed.			x	x	x	x	x				
239.01	Failure to conduct special inspections when required.			x	x	x	x	x				
241.01	Failure to keep records as required.	x										
241.02	Failure of Inspector to complete report at time of inspection.	x										
241.03	Failure of inspector to sign report.	x										
241.04	Failure of Inspector to provide required information.	x										
241.05	Failure of rail inspection record to provide required information.	x										
241.06	Failure to make records available for copying and inspection.	x										
241.07	Electronic system does not maintain the integrity of each record.	x										
241.08	Electronic system allows record or amendments to be modified.	x										
241.09	Electronic amendments not stored separately from record.	x										
241.10	Person making electronic amendment not identified.	x										
241.11	Electronic system corrupts or losses data.											
241.12	Paper copies of records not made available for inspection and copying.	x										
241.13	Inspection reports not available to Inspector or subsequent Inspectors.	x										
241.14	Electronic storage not initiated within 24 hours.	x										

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
B05.01	No written record of names of qualified persons to supervise restorations and renewals of track under traffic and/or to inspect track for defects, or to pass trains over broken rails or pull-aparts, or to maintain or inspect CWR.	x										
B05.02	Failure of track owner to provide written authorization to qualified designated individuals.	x										
B05.03	Failure to use qualified person to pass trains over broken rails or pull-aparts.			x	x	x	x	x	x	x	x	x
B05.04	Train speed exceeds 10 m.p.h. over broken rails or pull-aparts.			X	x	x	x	x	x	x	x	x
B05.05	Failure to promptly notify and dispatch person fully qualified under §213.305 to the location of the broken rail or pull apart.			x	x	x	x	x	x	x	x	x
B07.01	Train speed exceeds 200 mph without FRA approval.								x	x	x	x
B07.02	Freight transported at passenger train speeds in unqualified vehicles.								x	x	x	x
B07.03	Load distribution & securement in the freight vehicle adversely affects the dynamic performance of the vehicle or the axle loading pattern is not uniform & exceeds the passenger locomotive axle loadings in passenger trains at the same maximum speed.								x	x	x	x
B07.04	Carrier accepted or transported a hazardous material defined in 49 CFR Part 171.8 which is not acceptable for movement.								x	x	x	x
B07.05	Trains operated in excess of 150 mph not in conjunction with a Rule of Particular Applicability addressing other safety issues presented by the system.								x	x	x	x
B09.01	Reserved											
B09.02	Work performed during a period of restoration and renewal under traffic conditions which interrupts rail continuity.								x	x	x	x
B09.03	Work performed during a period of restoration and renewal under traffic conditions which adversely affects track stability.								x	x	x	x
B09.04	Removal and replacement of the rail fastenings on more than one tie at a time within 15 feet during a period of restoration and renewal under traffic conditions.								x	x	x	x
B19.01	Drainage or water-carrying facility not maintained.								x	x	x	x
B19.02	Drainage or water-carrying facility obstructed by debris.								x	x	x	x
B19.03	Drainage or water-carrying facility collapsed.								x	x	x	x
B19.04	Drainage or water-carrying facility obstructed by vegetation.								x	x	x	x
B19.05	Drainage or water-carrying facility obstructed by silting.								x	x	x	x
B19.06	Drainage or water-carrying facility deteriorated to allow subgrade saturation.								x	x	x	x
B19.07	Uncontrolled water undercutting track structure or embankment.								x	x	x	x

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
B21.01	Combustible vegetation around track-carrying structures.								x	x	x	x
B21.02	Vegetation obstructs visibility of railroad signs and fixed signals.								x	x	x	x
B21.03	Vegetation obstructs passing of day and night signals by railroad employees.								x	x	x	x
B21.04	Vegetation interferes with railroad employees performing normal trackside duties.								x	x	x	x
B21.05	Vegetation prevents proper functioning of signal and/or communication lines.								x	x	x	x
B21.06	Excessive vegetation at train order office, depot, interlocking plant, a carman's building, etc., prevents employees on duty from visually inspecting moving equipment when their duties so require.								x	x	x	x
B21.07	Excessive vegetation at train meeting points prevents proper inspection of moving equipment by railroad employees.								x	x	x	x
B21.08	Excessive vegetation in toepaths and around switches where employees are performing normal trackside duties.								x	x	x	x
B21.09	Vegetation brushing sides of rolling stock.								x	x	x	x
B21.10	Vegetation obstructs visibility of grade crossing warning signs and signals by the traveling public.								x	x	x	x
B23.01	Gage dimension exceeds allowable on tangent track.								x	x	x	x
B23.02	Gage dimension is less than allowable on tangent track.								x	x	x	x
B23.03	Gage dimension exceeds allowable on curved track.								x	x	x	x
B23.04	Gage dimension is less than allowable on curved track.								x	x	x	x
B23.05	Reserved								x	x	x	x
B23.06	Gage variation within 31 feet exceeds allowable.								x	x	x	x
B27.01	Reserved											
B27.02	Reserved											
B27.03	Reserved											
B27.04	The alinement of track exceeds the allowable deviation for a 31-foot chord for a single deviation.								x	x	x	x
B27.05	The alinement of track exceeds the allowable deviation for a 62-foot chord for a single deviation.								x	x	x	x
B27.06	The alinement of track exceeds the allowable deviation for a 124-foot chord for a single deviation.								x	x	x	x
B27.07	The alinement of track exceeds the allowable deviation for a 31-foot chord for three or more deviations.								x	x	x	x
B27.08	The alinement of track exceeds the allowable deviation for a 62-foot chord for three or more deviations.								x	x	x	x
B27.09	The alinement of track exceeds the allowable deviation for a 124-foot chord for three or more deviations.								x	x	x	x
B29.01	Reserved											
B29.02	Operating speed exceeds allowable for 3-inches of unbalance, based on curvature and elevation.								x	x	x	x

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
829.03	Reserved											
829.04	Reserved											
829.05	Operating speed exceeds allowable for a FRA approved unbalance based on curvature and elevation.								x	x	x	x
829.06	Maximum crosslevel on curve exceeds allowable.								x	x	x	x
831.01	Reserved											
831.02	Reserved											
831.03	Reserved											
831.04	Reserved											
831.05	Reserved											
831.06	Reserved											
831.07	Difference in crosslevel between any two points less than 62-feet apart on tangents exceeds allowable.								x	x	x	x
831.08	Difference in crosslevel between any two points less than 62-feet apart on curves between spirals exceeds allowable.								x	x	x	x
831.09	Difference in crosslevel between any two points less than 62-feet apart on spirals exceeds allowable.								x	x	x	x
831.10	Reserved											
831.11	Reserved											
831.12	Reserved											
831.13	Crosslevel differences for six or more consecutive pairs of staggered joints exceeds allowable								x	x	x	x
831.14	The profile of track exceeds the allowable deviation for a 31-foot chord for a single deviation.								x	x	x	x
831.15	The profile of track exceeds the allowable deviation for a 62-foot chord for a single deviation.								x	x	x	x
831.16	The profile of track exceeds the allowable deviation for a 124-foot chord for a single deviation.								x	x	x	x
831.17	The profile of track exceeds the allowable deviation for a 31-foot chord for three or more deviations.								x	x	x	x
831.18	The profile of track exceeds the allowable deviation for a 62-foot chord for three or more deviations.								x	x	x	x
831.19	The profile of track exceeds the allowable deviation for a 124-foot chord for three or more deviations.								x	x	x	x
833.01	Failure to inspect using TGMS at required frequency.	x										
833.02	Failure to operate qualified TGMS as required.	x										
833.03	Failure to keep TGMS records as required.	x										
833.04	Failure of TGMS report to provide required information.	x										
833.05	Failure to field verify a TGMS exception within two days.	x										
833.06	Failure to initiate remedial action for TGMS exception within two days.	x										
833.07	Failure to make TGMS records available for inspection.	x										
833.08	Failure to operate GRMS at required frequency.	x										
833.09	Lateral track capacity of track structure permits a gage widening ratio greater than allowed.										x	x
833.10	Failure to equip at least one vehicle per day with										x	x

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
	required accelerometers.											
B33.11	Failure to have written procedures for notification of track personnel when daily accelerometer measurements indicate a possible track-related condition.										X	X
B33.12	Failure to follow written procedures for notification of track personnel when daily accelerometer measurements indicate a possible track-related condition.										X	X
B33.13	Failure to operate an instrumented car or portable device to measure carbody and truck frame accelerations at required frequency.										X	X
B33.14	Failure to reduce train speeds when carbody and truck frame accelerations exceed allowable.										X	X
B33.15	Failure to keep records of acceleration measurements as required.										X	X
B33.16	Failure to operate an inspection vehicle with instrumented wheelsets to measure wheel/rail forces at required frequency.										X	X
B33.17	Failure to reduce train speed when wheel/rail forces exceed allowable.										X	X
B33.18	Failure to keep record of wheel/rail force measurements as required.	X										
B34.01	Insufficient Ballast								X	X	X	X
B34.02	Fouled Ballast								X	X	X	X
B35.01	Fewer than minimum allowable number of non-defective ties per 39 feet.								X	X	X	X
B35.02	No effective support ties within the prescribed distance from a joint.								X	X	X	X
B35.03	Crossties not effectively distributed to support a 39-foot segment of track.								X	X	X	X
B35.04	Reserved								X	X	X	X
B35.05	Reserved								X	X	X	X
B35.06	Track constructed without crossties does not effectively support track structure.								X	X	X	X
B35.07	Fewer than three non-defective ties each side of an effective tie.								X	X	X	X
B35.08	Less than nine out of 10 consecutive ties with tie plates.								X	X	X	X
B35.09	Metal object causing concentrated load between base of rail and bearing surface of tie plate.								X	X	X	X
B35.10	Insufficient tie plates.								X	X	X	X
B37.01	Transverse Fissure								X	X	X	X
B37.02	Compound Fissure								X	X	X	X
B37.03	Horizontal Split Head								X	X	X	X
B37.04	Vertical Split Head								X	X	X	X
B37.05	Split Web								X	X	X	X
B37.06	Piped Rail								X	X	X	X
B37.07	Bolt-Hole Crack								X	X	X	X
B37.08	Head Web Separation								X	X	X	X
B37.09	Broken Base								X	X	X	X

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
837.10	Detail Fracture								x	x	x	x
837.11	Engine Burn Fracture								x	x	x	x
837.12	Ordinary Break								x	x	x	x
837.13	Broken or Defective Weld								x	x	x	x
837.14	Damaged Rail								x	x	x	x
837.15	Flattened Rail								x	x	x	x
839.01	Failure to inspect rail for internal defects at required frequency.								x	x	x	x
839.02	Failure of equipment to inspect rail at joints.								x	x	x	x
839.03	Defective rail not marked properly.								x	x	x	x
839.04	Failure to reduce operating speed until valid rail inspection is performed.								x	x	x	x
841.01	Failure to conduct initial inspection of new rail.								x	x	x	x
841.02	Failure to inspect new welds made in new or used rail.								x	x	x	x
841.03	Failure to clearly mark rail defect found during initial inspection of new rail and welds.								x	x	x	x
843.01	Failure of track owner to develop and implement written CWR procedures.								x	x	x	x
843.02	Failure to comply with written CWR procedures.								x	x	x	x
843.03	Failure of track owner to develop a training program for the implementation of their written CWR procedures.								x	x	x	x
843.04	Failure to keep CWR records as required.								x	x	x	x
845.01	Failure to conduct qualification testing as required.								x	x	x	x
845.02	Operation at Class 6 and above speeds without approval of the FRA Associate Administrator for Safety.								x	x	x	x
847.01	Highway/rail crossings or rail-to-rail crossings at-grade are present on Class 8 and 9 track.								x	x	x	x
847.02	Unapproved warning/barrier systems on class 7 track.								x	x	x	x
849.01	Rail-end mismatch on tread of rail exceeds allowable.								x	x	x	x
849.02	Rail-end mismatch on gage side of rail exceeds allowable.								x	x	x	x
851.01	Rail joint not of structurally sound design and dimension.								x	x	x	x
851.02	Cracked or broken joint bar (other than center-break).								x	x	x	x
851.03	Center cracked or broken joint bar.								x	x	x	x
851.04	Worn joint bar allows vertical movement of rail in joint.								x	x	x	x
851.05	Less than 2 bolts per rail at each joint for conventional jointed rail.								x	x	x	x
851.06	Reserved								x	x	x	x
851.07	Less than 2 bolts per rail at any joint in continuous welded rail.								x	x	x	x
851.08	Loose joint bars.								x	x	x	x
851.09	Torch-cut or burned-bolt hole.								x	x	x	x
851.10	Joint bar reconfigured by torch cutting.								x	x	x	x
852.01	Torch cut rail applied for other than emergency.								x	x	x	x
852.02	Failure to remove torch cut rails within specified time								x	x	x	x

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
	frame.											
352.03	Failure to remove non-inventoried torch cut rail within 30 days of discovery.								x	x	x	x
352.04	Reserved											
352.05	Train speed exceeds allowable over torch cut rail.								x	x	x	x
353.01	Loose, worn, or missing switch clips.								x	x	x	x
353.02	Loose, worn, or missing clip bolts (transit, side jaw, eccentric, vertical).								x	x	x	x
353.03	Loose, worn, or defective connecting rod.								x	x	x	x
353.04	Loose, worn, or defective connecting rod fastening.								x	x	x	x
353.05	Loose, worn, or defective switch rod.								x	x	x	x
353.06	Loose, worn, or missing switch rod bolts.								x	x	x	x
353.07	Worn or missing cotter pins.								x	x	x	x
353.08	Loose or missing rigid rail braces.								x	x	x	x
353.09	Loose or missing adjustable rail braces.								x	x	x	x
353.10	Missing switch, frog, or guard rail plates.								x	x	x	x
353.11	Loose or missing switch point stops.								x	x	x	x
353.12	Loose, worn, or missing frog bolts.								x	x	x	x
353.13	Loose, worn, or missing guard rail bolts.								x	x	x	x
353.14	Loose, worn or missing guard rail clamps, wedge, separator block, or end block.								x	x	x	x
353.15	Obstruction between switch point and stock rail.								x	x	x	x
353.16	Obstruction in flangeway of frog.								x	x	x	x
353.17	Obstruction in flangeway of guard rail.								x	x	x	x
353.18	Insufficient anchorage to restrain rail movement.								x	x	x	x
353.19	Flangeway less than 1-1/2 inches wide.								x	x	x	x
353.20	Stock rail not securely seated in switch plates.								x	x	x	x
353.21	Stock rail canted by overtightening rail braces.								x	x	x	x
353.22	Improper fit between switch point and stock rail.								x	x	x	x
353.23	Outer edge of wheel contacting gage side of stock rail.								x	x	x	x
353.24	Excessive lateral or vertical movement of switch point.								x	x	x	x
353.25	Heel of switch insecure.								x	x	x	x
353.26	Insecure switch stand or switch machine.								x	x	x	x
353.27	Insecure connecting rod.								x	x	x	x
353.28	Throw lever operable with switch lock or keeper in place.								x	x	x	x
353.29	Switch position indicator not clearly visible.								x	x	x	x
353.30	Unusually chipped or worn switch point.								x	x	x	x
353.31	Improper switch closure due to metal flow.								x	x	x	x
353.32	Insufficient flangeway depth.								x	x	x	x
353.33	Frog point chipped, broken, or worn in excess of allowable.								x	x	x	x
353.34	Tread portion of frog worn in excess of allowable.								x	x	x	x
353.99	Severe frog condition not otherwise provided								x	x	x	x
353.35	Outer edge of wheel contacting side of spring wing rail.								x	x	x	x
353.36	Toe of wing rail not fully bolted and tight.								x	x	x	x
353.37	Ties under or wing rail not solidly tamped.								x	x	x	x

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
B53.38	Bolt-hole defect in frog.								x	x	x	x
B53.39	Head and web separation in frog.								x	x	x	x
B53.40	Insufficient tension in spring to hold wing rail against point rail.								x	x	x	x
B53.41	Excessive clearance between hold-down housing and horn								x	x	x	x
B53.42	Turnout or crossover not being maintained in accordance with Guidebook.								x	x	x	x
B53.43	Lift rail assembly or other transition device on moveable bridge not being maintained in accordance with Guidebook.								x	x	x	x
B55.01	Guard check gage less than allowable.								x	x	x	x
B55.02	Guard face gage exceeds allowable.								x	x	x	x
B55.03	Cracked or broken guard rail.								x	x	x	x
B57.01	Derail not clearly visible.								x	x	x	x
B57.02	Derail operable when locked.								x	x	x	x
B57.04	Improper size derail.								x	x	x	x
B57.05	Improperly installed derail.								x	x	x	x
B57.06	Loose, worn, or defective parts of derail.								x	x	x	x
B57.07	Derail not present when required								x	x	x	x
B57.08	Derailing device not of proper design to physically stop or divert movement								x	x	x	x
B57.09	Derail not interconnected to the signal system when required								x	x	x	x
B61.01	Failure to provide Right of Way plan								x	x	x	x
B61.02	Failure of Right of Way plan to contain required information								x	x	x	x
B65.01	Track inspected by other than qualified designated individual.								x	x	x	x
B65.02	Track being inspected at excessive speed.								x	x	x	x
B65.03	Failure to inspect at required frequency.	x										
B65.04	Failure to initiate remedial action for deviations found.	x							x	x	x	x
B65.05	One Inspector inspecting more than two tracks.	x							x	x	x	x
B65.06	Two Inspectors inspecting more than four tracks.	x							x	x	x	x
B65.07	Inspection performed on track outside of maximum allowable track center distances.	x							x	x	x	x
B65.08	Main track not traversed within the required frequency.	x										
B65.09	Siding track not traversed within the required frequency.	x										
B65.10	Failure to inspect turnouts at required frequency.	x										
B65.11	Failure to inspect track crossings at required frequency.	x										
B65.12	Failure to inspect lift rail assemblies or other transition devices on moveable bridges at required frequency	x										
B65.13	Failure to operate a train at 100 m.p.h. or less after an eight hour period with no train operation	x										
B67.01	Failure to conduct special inspections when required.	x										
B69.01	Failure to keep records as required.	x										

Appendix C - Track Class/Defect Code Matrix												
Defect Codes		Track Class										
Code	Description	R	X	1	2	3	4	5	6	7	8	9
869.02	Failure of Inspector to complete report at time of inspection.	x										
869.03	Failure of Inspector to sign report.	x										
869.04	Failure of Inspector to provide required information.	x										
869.05	Failure of rail inspection record to provide required information.	x										
869.06	Failure to make records available for copying and inspection.	x										
869.07	Electronic system does not maintain the integrity of each record.	x										
869.08	Electronic system allows record or amendments to be modified.	x										
869.09	Electronic amendments not stored separately from record.	x										
869.10	Person making electronic amendment not identified.	x										
869.11	Electronic system corrupts or losses data.	x										
869.12	Paper copies of records not made available for inspection and copying.	x										
869.13	Inspection reports not available to Inspector or subsequent Inspectors.	x										
869.14	Electronic storage not initiated within 24 hours.	x										

Notes:

- (1) No defects permitted from a vehicle (separate report with appropriate source code for field verified defects).
- (R) Records inspections.

Appendix D - Source/Activity Code Matrix																		
Activity Codes		Source Codes																
		Reg Insp	Complaint	Accident	Special Assessment	Waiver	Assist Other Fed Agency	Other	Nuclear Route	ATIP	ATIP Follow Up	Inspect from Train	Regular STRACNET	Special STRACNET	ATIP STRACNET	Reinspect	Manut. Facility	Focused Inspection
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	R	V	W
Remedial Action	209							x										
Camp Car	218C	x	x	x	x	x	x	x	x			x	x		x		x	
FRA Geometry	ATIP									x	x				x			
Barrier Plan	BAP	x	x	x	x	x	x	x	x			x	x		x		x	
Bridge Worker	BWK	x	x	x	x	x	x	x	x		x	x	x		x		x	
CWR Plans	CWRP	x	x	x	x	x	x	x	x			x	x		x		x	
Derail	DER	x	x	x	x	x	x	x	x			x	x		x		x	
GRMS - Govt	GRMG		x		x		x	x	x								x	
GRMS - Railroad	GRMS	x	x	x	x	x	x	x				x	x		x			
Highway Rail Vegetation	HGCT	x	x	x	x	x	x	x	x			x	x		x		x	
Lift Rail	LRA	x	x	x	x	x	x	x	x			x	x		x		x	
Bride Inspection	MSB	x	x	x	x		x	x	x			x	x		x		x	
Main Track Hi Rail	MTH	x	x	x	x	x	x	x	x			x	x		x		x	
Main Track Walk	MTW	x	x	x	x	x	x	x	x			x	x		x		x	
Noise	NOIS	x	x	x	x	x	x	x				x	x		x		x	
Qualification Test Plan	QTP	x	x	x	x	x	x	x	x			x	x		x		x	
Vehicle Qualification Test	QVT	x	x	x	x	x	x	x	x			x	x		x		x	
Rail Mill Facility	RMI				x	x	x	x	x						x	x	x	
Right of Way Plan	RWOP	x	x	x	x	x	x	x	x			x	x		x		x	
Roadway Worker	RWP	x	x	x	x	x	x	x	x		x	x	x	x	x		x	

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		A	B	C	D	E	F	G	H	I	J	K	L	M	N	R	V	W
Rail Crossing Main	RXM	x	x	x	x	x	x	x	x				x	x		x		x
Rail Crossing Yard	RXY	x	x	x	x	x	x	x	x				x	x		x		x
Speed (Radar)	SPCL	x	x	x	x		x	x	x				x	x		x		x
Railroad Geometry Car	TGMS	x	x	x	x	x	x	x	x				x	x		x		
Turnout Main	TOM	x	x	x	x	x	x	x	x				x	x		x		x
Turnout Yard	TOY	x	x	x	x	x	x	x	x				x	x		x		x
Track Inspection Records	TREC	x	x	x	x	x	x	x	x				x	x		x		x
Inspect From Train	TRM	x	x	x	x	x	x	x	x			x	x	x		x		x
Yard Track Hi Rail	YTH	x	x	x	x	x	x	x	x				x	x		x		x
Yard Track Walk	YTW	x	x	x	x	x	x	x	x				x	x		x		x
Vehicle/Track Interaction	VTI	x	x		x	x	x	x	x				x	x		x		x
Welding Plant	WPI		x	x	x	x	x	x								x	x	x

Appendix E - Activity/Defect Code Matrix																									
Defect Codes		Activity Codes																							
Code	Description	ATIP (1)	DER	MTH MTW	RXM	RXY	SPCL	TOM	TOY	TREC	TRM	YTH YTW	HGCT	QVT	LRA	TGMS	GRMS	GRMG (1)	VTI (1)	RMI	WPI	CWRP	QTP	ROWP	BAP
4.01	Excepted track segment not identified in appropriate record.									x															
4.02	Excepted track segment located within 30 feet of an adjacent track subject to simultaneous operation at speeds in excess of 10 mph.			x	x	x		x	x			x													
4.03	Excepted track not inspected in accordance with §213.233(c) and 213.235 as specified for Class 1 track.			x	x	x		x	x			x													
4.04	Train speed exceeds 10 mph on excepted track.						x																		
4.05	Occupied passenger train operated on excepted track.			x								x													
4.06	Freight train operated on excepted track with more than five cars required to be placarded in accordance with 49 CFR Part 172.			x								x													
4.07	Train with a car required to be placarded by 49 CFR Part 172 operated over excepted track within 100 feet of a bridge or in a public street or highway.			x								x													
4.08	Failure to notify FRA of removal of trackage from excepted status.									x															
7.01	No written record of names of qualified persons to supervise restorations and renewals of track under traffic and/or to inspect track for defects, or to pass trains over broken rails or pull-aparts.									x															
7.02	Failure of track owner to provide written authorization to qualified designated individuals.									x															
7.03	Failure to use qualified person to pass trains over broken rails or pull-aparts.			x	x	x		x	x			x													
7.04	Train speed exceeds 10 m.p.h. over broken rails or pull-aparts.			x	x	x	x	x	x			x													
7.05	Failure to promptly notify and dispatch person fully qualified under §213.7 to the location of the broken rail or pull apart.			x	x	x		x	x			x													
9.01	Failure to restore other than excepted track to compliance with Class 1 stds. within 30 days after a person designated under §213.7(a) has determined that operations may safely continue over defect(s) not meeting Class 1 or excepted track stds.			x	x	x		x	x			x													
9.02	Failure of track owner to enforce, over Class 1 defects, the limiting conditions imposed by person designated under §213.7(a).			x	x	x		x	x			x													

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Code	Description																								
9.03	Reserved.																								
11.01	Proper qualified supervision not provided at work site during work hours when track is being restored or renewed under traffic conditions.			X	X	X		X	X						X										
33.01	Drainage or water-carrying facility not maintained.			X											X										
33.02	Drainage or water-carrying facility obstructed by debris.			X											X										
33.03	Drainage or water-carrying facility collapsed.			X											X										
33.04	Drainage or water-carrying facility obstructed by vegetation.			X											X										
33.05	Drainage or water-carrying facility obstructed by silting.			X											X										
33.06	Drainage or water-carrying facility deteriorated to allow subgrade saturation.			X											X										
33.07	Uncontrolled water undercutting track structure or embankment.			X											X										
37.01	Combustible vegetation around track-carrying structures.			X											X										
37.02	Vegetation obstructs visibility of railroad signs and fixed signals.			X											X										
37.03	Vegetation obstructs passing of day and night signals by railroad employees.			X											X										
37.04	Vegetation interferes with railroad employees performing normal trackside duties.			X	X	X		X	X						X										
37.05	Vegetation prevents proper functioning of signal and/or communication lines.			X											X										
37.06	Excessive vegetation at train order office, depot, interlocking plant, a carman's building, etc., prevents employees on duty from visually inspecting moving equipment when their duties so require.			X	X	X		X	X						X										
37.07	Excessive vegetation at train meeting points prevents proper inspection of moving equipment by railroad employees.			X											X										
37.08	Excessive vegetation in toepaths and around switches where employees are performing normal trackside duties.			X				X	X						X										
37.09	Vegetation brushing sides of rolling stock.			X											X										
37.10	Vegetation obstructs visibility of grade crossing warning signs and signals by the traveling public.			X											X	X									

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Code	Description																								
53.01	Gage dimension exceeds allowable on tangent track.			x	x	x		x	x			x													
53.02	Gage dimension is less than allowable on tangent track.			x	x	x		x	x			x													
53.03	Gage dimension exceeds allowable on curved track.			x	x	x		x	x			x													
53.04	Gage dimension is less than allowable on curved track.			x	x	x		x	x			x													
53.05	Gage dimension exceeds allowable for excepted track.			x	x	x		x	x			x													
55.01	Alinement deviation of tangent track exceeds allowable.			x	x	x		x	x			x													
55.02	Alinement deviation of curved track exceeds allowable for a 62-foot chord.			x	x	x		x	x			x													
55.03	Alinement deviation of curved track exceeds allowable for a 31-foot chord.			x	x	x		x	x			x													
57.01	Reserved																								
57.02	Operating speed exceeds allowable for 3-inches of unbalance, based on curvature and elevation.			x	x	x		x	x			x													
57.03	Operating speed exceeds allowable for 4-inches of unbalance, based on curvature and elevation.			x	x	x		x	x			x													
57.04	Operating speed exceeds allowable for a FRA approved unbalance based on curvature and elevation approved for track contiguous to high speed track.			x	x	x		x	x			x													
57.05	Reserved																								
57.06	Maximum crosslevel on curve exceeds allowable.			x	x	x		x	x			x													
63.01	Runoff in any 31-feet of rail at end of raise exceeds allowable.			x	x	x		x	x			x													
63.02	Deviation from uniform profile on either rail exceeds allowable.			x	x	x		x	x			x													
63.03	Reserved																								
63.04	Reserved.																								
63.05	Deviation from zero crosslevel at any point on tangent exceeds allowable.			x	x	x		x	x			x													
63.06	Reserved																								
63.07	Difference in crosslevel between any two points less than 62-feet apart on tangents exceeds allowable.			x	x	x		x	x			x													
63.08	Difference in crosslevel between any two points less than 62-feet apart on curves between spirals exceeds allowable.			x	x	x		x	x			x													

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Defect Codes		Activity Codes																								
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63.09	Difference in crosslevel between any two points less than 62-feet apart on spirals exceeds allowable.			x	x	x		x	x			x														
63.10	Reverse elevation on curve exceeds allowable.			x	x	x		x	x			x														
63.11	Variation in crosslevel per 31-feet exceeds allowable on restricted length spiral.			x	x	x		x	x			x														
63.12	Difference in crosslevel within 62-feet between a point on a curve that equals or exceeds 6-inches and a point with greater elevation exceed allowable.			x	x	x		x	x			x														
63.13	Crosslevel differences for six or more consecutive pairs of staggered joints exceeds allowable.			x								x														
103.01	Insufficient Ballast			x	x	x		x	x			x														
103.02	Fouled Ballast			x	x	x		x	x			x														
109.01	Reserved			x				x	x			x														
109.02	No effective support ties within the prescribed distance from a joint.			x	x	x		x	x			x														
109.03	Crossties not effectively distributed to support a 39-foot segment of track.			x	x	x		x	x			x														
109.04	Fewer than minimum allowable number of non-defective ties per 39 feet for tangent and curved track less than 2 degrees. [used after 09/21/00]			x				x	x			x														
109.05	Fewer than minimum allowable number of non-defective ties per 39 feet for turnouts and curved track over 2 degrees. [used after 09/21/00]			x				x	x			x														
109.06	Track constructed without crossties does not effectively support track structure.			x	x	x		x	x			x														
110.01	Failure to notify FRA at least 30 days prior to the designation of a GRMS line segment.																	x								
110.02	Failure to notify FRA at least 10 days prior to the removal of a line segment from GRMS designation.																	x								
110.03	Failure to provide required information identifying a GRMS line segment.																	x								
110.04	Failure to provide sufficient technical data to establish compliance with minimum GRMS design requirements.																	x								
110.05	Failure to maintain and operate GRMS within minimum design requirements over designated GRMS line segments.																	x								
110.06	Failure of GRMS to provide analog trace of specified parameters																	x								

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Defect Codes		Activity Codes																							
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110.07	Failure of GRMS to provide exception report listing of specified parameters.																x								
110.08	Failure to provide exception report listing to § 213.7 individual prior to next inspection required under § 213.233.																x								
110.09	Failure to maintain and make available documented calibration procedures on GRMS vehicle.																x								
110.10	Failure to initiate a daily instrument verification procedure.																x								
110.11	Failure to maintain PTLF accuracy within five-percent of 4,000-pound reading.																x								
110.12	Failure to make available GRMS training program.																x								
110.13	Failure of GRMS training program to meet minimum requirements.																x								
110.14	Failure to provide GRMS training to § 213.7 individual whose territory is subject to requirements of § 213.110.																x								
110.15	Failure to initiate required remedial action for exceptions listed on GRMS record of lateral restraint.																x								
110.16	Gage widening exceeds allowable measured with PTLF.																x								
110.17	Failure to provide functional PTLF to § 213.7 individual whose territory is subject to requirements of § 213.110.																x								
110.18	Failure to restore contact between rail and lateral rail restraint components																x								
110.19	Failure to keep GRMS records as required.																x								
110.20	Failure to conduct GRMS inspections at required frequency.																x								
113.01	Transverse Fissure			x	x	x		x	x			x													
113.02	Compound Fissure			x	x	x		x	x			x													
113.03	Horizontal Split Head			x	x	x		x	x			x													
113.04	Vertical Split Head			x	x	x		x	x			x													
113.05	Split Web			x	x	x		x	x			x													
113.06	Piped Rail			x	x	x		x	x			x													
113.07	Bolt-Hole Crack			x	x	x		x	x			x													
113.08	Head Web Separation			x	x	x		x	x			x													
113.09	Broken Base			x	x	x		x	x			x													
113.10	Detail Fracture			x	x	x		x	x			x													

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113.11	Engine Burn Fracture			x	x	x		x	x			x													
113.12	Ordinary Break			x	x	x		x	x			x													
113.13	Broken or Defective Weld			x	x	x		x	x			x													
113.14	Damaged Rail			x	x	x		x	x			x													
113.15	Flattened Rail			x	x	x		x	x			x													
115.01	Rail-end mismatch on tread of rail exceeds allowable.			x	x	x		x	x			x													
115.02	Rail-end mismatch on gage side of rail exceeds allowable.			x	x	x		x	x			x													
119.01	Failure of track owner to develop and implement written CWR procedures.																						x		
119.02	Failure to comply with written CWR procedures.																						x		
119.03	Failure of track owner to develop a training program for the implementation of their written CWR procedures.																						x		
119.04	Failure to keep CWR records as required.																						x		
121.01	Rail joint not of structurally sound design and dimension.			x	x	x		x	x			x													
121.02	Cracked or broken joint bar in Classes 3 through 5 track (other than center-break).			x	x	x		x	x			x													
121.03	Center cracked or broken joint bar.			x	x	x		x	x			x													
121.04	Worn joint bar allows excessive vertical movement of rail in joint in Classes 3 through 5 track.			x	x	x		x	x			x													
121.05	Less than 2 bolts per rail at each joint for conventional jointed rail in Classes 2 through 5 track.			x	x	x		x	x			x													
121.06	Less than 1 bolt per rail at each joint for conventional jointed rail in Class 1 track.			x	x	x		x	x			x													
121.07	Less than 2 bolts per rail at any joint in continuous welded rail.			x	x	x		x	x			x													
121.08	Loose joint bars.			x	x	x		x	x			x													
121.09	Torch-cut or burned-bolt hole in rail in Classes 2 through 5 track.			x	x	x		x	x			x													
121.10	Joint bar reconfigured by torch cutting in Classes 3 through 5 track.			x	x	x		x	x			x													
122.01	Torch cut rail applied in Class 3 through 5 track for other than emergency.			x	x	x		x	x			x													
122.02	Failure to remove torch cut rails within specified time frame.			x	x	x		x	x			x													
122.03	Failure to remove non-inventoried torch cut rail within 30 days of discovery.			x	x	x		x	x			x													

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122.04	Train speed exceeds allowable over non-inventoried torch cut rail.			x	x	x		x	x			x													
123.01	Insufficient tie plates in Class 3 through 5 track.			x	x	x		x	x			x													
123.02	Object between base of rail and the bearing surface of the tie plate causing concentrated load.			x	x	x		x	x			x													
127.01	Insufficient fasteners in a 39-foot track segment.			x	x	x		x	x			x													
133.01	Loose, worn, or missing switch clips.				x	x		x	x																
133.02	Loose, worn, or missing clip bolts (transit, side jaw, eccentric, vertical).				x	x		x	x																
133.03	Loose, worn, or defective connecting rod.				x	x		x	x																
133.04	Loose, worn, or defective connecting rod fastening.				x	x		x	x																
133.05	Loose, worn, or defective switch rod.				x	x		x	x																
133.06	Loose, worn, or missing switch rod bolts.				x	x		x	x																
133.07	Worn or missing cotter pins.				x	x		x	x																
133.08	Loose or missing rigid rail braces.				x	x		x	x																
133.09	Loose or missing adjustable rail braces.				x	x		x	x																
133.10	Missing switch, frog, or guard rail plates.				x	x		x	x																
133.11	Loose or missing switch point stops.				x	x		x	x																
133.12	Loose, worn, or missing frog bolts.				x	x		x	x																
133.13	Loose, worn, or missing guard rail bolts.				x	x		x	x																
133.14	Loose, worn or missing guard rail clamps, wedge, separator block, or end block.				x	x		x	x																
133.15	Obstruction between switch point and stock rail.				x	x		x	x																
133.16	Obstruction in flangeway of frog.				x	x		x	x																
133.17	Obstruction in flangeway of guard rail.				x	x		x	x																
133.18	Insufficient anchorage to restrain rail movement.				x	x		x	x																
133.19	Flangeway less than 1 1/2 inches wide.				x	x		x	x																
135.01	Stock rail not securely seated in switch plates.				x	x		x	x																
135.02	Stock rail canted by overtightening rail braces.				x	x		x	x																
135.03	Improper fit between switch point and stock rail.				x	x		x	x																
135.04	Outer edge of wheel contacting gage side of stock rail.				x	x		x	x																
135.05	Excessive lateral or vertical movement of switch point.				x	x		x	x																
135.06	Heel of switch insecure.				x	x		x	x																
135.07	Insecure switch stand or switch machine.				x	x		x	x																
135.08	Insecure connecting rod.				x	x		x	x																
135.09	Throw lever operable with switch lock or keeper in place.				x	x		x	x																

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135.10	Switch position indicator not clearly visible.				X	X		X	X																
135.11	Unusually chipped or worn switch point.				X	X		X	X																
135.12	Improper switch closure due to metal flow.				X	X		X	X																
135.13	Use of tongue and plane mate where speeds exceed class one				X	X		X	X																
137.01	Insufficient flangeway depth.				X	X		X	X																
137.02	Frog point chipped, broken, or worn in excess of allowable.				X	X		X	X																
137.03	Tread portion of frog worn in excess of allowable.				X	X		X	X																
137.04	Use of flange bearing frog where speed exceeds that permitted by Class 1.				X	X		X	X																
137.99	Severe frog condition not otherwise provided.				X	X		X	X																
139.01	Outer edge of wheel contacting side of spring wing rail.							X	X																
139.02	Toe of wing rail not fully bolted and tight.							X	X																
139.03	Ties under or wing rail not solidly tamped.							X	X																
139.04	Bolt-hole defect in frog.							X	X																
139.05	Head and web separation in frog.							X	X																
139.06	Insufficient tension in spring to hold wing rail against point rail.							X	X																
139.07	Excessive clearance between hold-down housing and horn.							X	X																
141.01	Raised guard worn excessively.							X	X																
141.02	Frog point rebuilt before restoring guarding face.							X	X																
143.01	Guard check gage less than allowable.				X	X		X	X																
143.02	Guard face gage exceeds allowable.				X	X		X	X																
143.03	Cracked or broken guard rail.				X	X		X	X																
205.01	Derail not clearly visible.		X																						
205.02	Derail operable when locked.		X																						
205.03	Reserved																								
205.04	Improper size derail.		X																						
205.05	Improperly installed derail.		X																						
205.06	Loose, worn, or defective parts of derail.		X																						
233.01	Track inspected by other than qualified designated individual.			X	X	X		X	X			X													
233.02	Track being inspected at excessive speed.			X	X	X		X	X			X													
233.03	Failure to inspect at required frequency.									X															
233.04	Failure to initiate remedial action for deviations found.			X	X	X		X	X	X		X													
233.05	One Inspector inspecting more than two tracks.			X						X		X													

Appendix E - Activity/Defect Code Matrix																									
Defect Codes		Activity Codes																							
		ATIP (1)	DER	MTH MTW	RXM	RXY	SPCL	TOM	TOY	TREC	TRM	YTH YTW	HGCT	QVT	LRA	TGMS	GRMS	GRMG (1)	VTI (1)	RMI	WPI	CWRP	QTP	ROWP	BAP
Code	Description																								
233.06	Two Inspectors inspecting more than four tracks.			x					x		x														
233.07	Inspection performed on track outside of maximum allowable track center distances.			x					x		x														
233.08	Main track not traversed within the required frequency.								x																
233.09	Siding track not traversed within the required frequency.								x																
235.01	Failure to inspect turnouts at required frequency.								x																
235.02	Failure to inspect track crossings at required frequency.								x																
235.03	Failure to inspect lift rail assemblies or other transition devices on moveable bridges at required frequency.								x																
235.04	Failure to operate specified switches in Classes 3 through 5.							x	x	x															
237.01	Failure to inspect rail for internal defects at required frequency.			x	x	x		x	x	x															
237.02	Failure of equipment to inspect rail at joints.			x	x	x		x	x																
237.03	Defective rail not marked properly.			x	x	x		x	x																
237.04	Failure to reduce operating speed until valid rail inspection is performed.			x	x	x		x	x																
239.01	Failure to conduct special inspections when required.			x	x	x		x	x																
241.01	Failure to keep records as required.									x															
241.02	Failure of Inspector to complete report at time of inspection.									x															
241.03	Failure of inspector to sign report.									x															
241.04	Failure of Inspector to provide required information.									x															
241.05	Failure of rail inspection record to provide required information.									x															
241.06	Failure to make records available for copying and inspection.									x															
241.07	Electronic system does not maintain the integrity of each record.									x															
241.08	Electronic system allows record or amendments to be modified.									x															
241.09	Electronic amendments not stored separately from record.									x															
241.10	Person making electronic amendment not identified.									x															
241.11	Electronic system corrupts or loses data.									x															

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Code	Description																								
241.12	Paper copies of records not made available for inspection and copying.								x																
241.13	Inspection reports not available to Inspector or subsequent Inspectors.								x																
241.14	Electronic storage not initiated within 24 hours.								x																
305.01	No written record of names of qualified persons to supervise restorations and renewals of track under traffic and/or to inspect track for defects, or to pass trains over broken rails or pull-aparts, or to maintain or inspect CWR.								x																
305.02	Failure of track owner to provide written authorization to qualified designated individuals.								x																
305.03	Failure to use qualified person to pass trains over broken rails or pull aparts.			x	x	x		x	x					x											
305.04	Train speed exceeds 10 m.p.h. over broken rails or pull aparts.			x	x	x		x	x					x											
305.05	Failure to promptly notify and dispatch person fully qualified under §213.305 to the location of the broken rail or pull apart.			x	x	x		x	x					x											
307.01	Train speed exceeds 200 mph without FRA approval.			x	x	x		x	x					x											
307.02	Freight transported at passenger train speeds in unqualified vehicles.			x	x	x		x	x					x											
307.03	Load distribution & securement in the freight vehicle adversely affects the dynamic performance of the vehicle or the axle loading pattern is not uniform & exceeds the passenger locomotive axle loadings in passenger trains at the same maximum speed.			x	x	x		x	x					x											
307.04	Carrier accepted or transported a hazardous material defined in 49 CFR Part 171.8 which is not acceptable for movement.			x	x	x		x	x																
307.05	Trains operated in excess of 150 mph not in conjunction with a Rule of Particular Applicability addressing other safety issues presented by the system.			x	x	x		x	x																
309.01	Reserved																								
309.02	Work performed during a period of restoration and renewal under traffic conditions which interrupts rail continuity.			x	x	x		x	x					x											
309.03	Work performed during a period of restoration and renewal under traffic conditions which adversely affects track stability.			x	x	x		x	x					x											

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Code	Description																								
309.04	Removal and replacement of the rail fastenings on more than one tie at a time within 15 feet during a period of restoration and renewal under traffic conditions.			x	x	x		x	x			x													
319.01	Drainage or water-carrying facility not maintained.			x								x													
319.02	Drainage or water-carrying facility obstructed by debris.			x								x													
319.03	Drainage or water-carrying facility collapsed.			x								x													
319.04	Drainage or water-carrying facility obstructed by vegetation.			x								x													
319.05	Drainage or water-carrying facility obstructed by silting.			x								x													
319.06	Drainage or water-carrying facility deteriorated to allow subgrade saturation.			x								x													
319.07	Uncontrolled water undercutting track structure or embankment.			x								x													
321.01	Combustible vegetation around track-carrying structures.			x								x													
321.02	Vegetation obstructs visibility of railroad signs and fixed signals.			x								x													
321.03	Vegetation obstructs passing of day and night signals by railroad employees.			x								x													
321.04	Vegetation interferes with railroad employees performing normal trackside duties.			x								x													
321.05	Vegetation prevents proper functioning of signal and/or communication lines.			x								x													
321.06	Excessive vegetation at train order office, depot, interlocking plant, a carman's building, etc., prevents employees on duty from visually inspecting moving equipment when their duties so require.			x	x	x		x	x			x													
321.07	Excessive vegetation at train meeting points prevents proper inspection of moving equipment by railroad employees.			x								x													
321.08	Excessive vegetation in toepaths and around switches where employees are performing normal trackside duties.			x				x	x			x													
321.09	Vegetation brushing sides of rolling stock.			x								x													
321.10	Vegetation obstructs visibility of grade crossing warning signs and signals by the traveling public.			x								x	x												
323.01	Gage dimension exceeds allowable on tangent track.			x	x	x		x	x			x													

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Code	Description																								
323.02	Gage dimension is less than allowable on tangent track.			x	x	x		x	x			x													
323.03	Gage dimension exceeds allowable on curved track.			x	x	x		x	x			x													
323.04	Gage dimension is less than allowable on curved track.			x	x	x		x	x			x													
323.05	Reserved																								
323.06	Gage variation within 31 feet exceeds allowable.			x	x	x		x	x			x													
327.01	Reserved																								
327.02	Reserved																								
327.03	Reserved																								
327.04	The alinement of track exceeds the allowable deviation for a 31-foot chord for a single deviation.			x	x	x		x	x			x													
327.05	The alinement of track exceeds the allowable deviation for a 62-foot chord for a single deviation.			x	x	x		x	x			x													
327.06	The alinement of track exceeds the allowable deviation for a 124-foot chord for a single deviation.			x	x	x		x	x			x													
327.07	The alinement of track exceeds the allowable deviation for a 31-foot chord for three or more deviations.			x	x	x		x	x			x													
327.08	The alinement of track exceeds the allowable deviation for a 62-foot chord for three or more deviations.			x	x	x		x	x			x													
327.09	The alinement of track exceeds the allowable deviation for a 124-foot chord for three or more deviations.			x	x	x		x	x			x													
329.01	Reserved																								
329.02	Operating speed exceeds allowable for 3-inches of unbalance, based on curvature and elevation.			x	x	x		x	x			x													
329.03	Reserved																								
329.04	Reserved																								
329.05	Operating speed exceeds allowable for a FRA approved unbalance based on curvature and elevation.			x	x	x		x	x			x													
329.06	Maximum crosslevel on curve exceeds allowable.			x	x	x		x	x			x													
331.01	Reserved																								
331.02	Reserved																								
331.03	Reserved																								
331.04	Reserved																								
331.05	Reserved																								

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Defect Codes		Activity Codes																								
Code	Description	ATIP (1)	DER	MTH MTW	RXM	RXY	SPCL	TOM	TOY	TREC	TRM	YTH YTW	HGCT	QVT	LRA	TGMS	GRMS	GRMG (1)	VTI (1)	RMI	WPI	CWRP	QTP	ROWP	BAP	
331.06	Reserved																									
331.07	Difference in crosslevel between any two points less than 62-feet apart on tangents exceeds allowable.			x	x	x		x	x			x														
331.08	Difference in crosslevel between any two points less than 62-feet apart on curves between spirals exceeds allowable.			x	x	x		x	x			x														
331.09	Difference in crosslevel between any two points less than 62-feet apart on spirals exceeds allowable.			x	x	x		x	x			x														
331.10	Reserved																									
331.11	Reserved																									
331.12	Reserved																									
331.13	Crosslevel differences for six or more consecutive pairs of staggered joints exceeds allowable			x								x														
331.14	The profile of track exceeds the allowable deviation for a 31-foot chord for a single deviation.			x	x	x		x	x			x														
331.15	The profile of track exceeds the allowable deviation for a 62-foot chord for a single deviation.			x	x	x		x	x			x														
331.16	The profile of track exceeds the allowable deviation for a 124-foot chord for a single deviation.			x	x	x		x	x			x														
331.17	The profile of track exceeds the allowable deviation for a 31-foot chord for three or more deviations.			x	x	x		x	x			x														
331.18	The profile of track exceeds the allowable deviation for a 62-foot chord for three or more deviations.			x	x	x		x	x			x														
331.19	The profile of track exceeds the allowable deviation for a 124-foot chord for three or more deviations.			x	x	x		x	x			x														
333.01	Failure to inspect using TGMS at required frequency.										x															
333.02	Failure to operate qualified TGMS as required.										x															
333.03	Failure to keep TGMS records as required.										x															
333.04	Failure of TGMS report to provide required information.										x															
333.05	Failure to field verify a TGMS exception within two days.										x															
333.06	Failure to initiate remedial action for TGMS exception within two days.										x															
333.07	Failure to make TGMS records available for inspection.										x															
333.08	Failure to operate GRMS at required frequency.										x															
333.09	Lateral track capacity of track structure permits a																x									

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Code	Description	ATIP (1)	DER	MTH MTW	RXM	RXY	SPCL	TOM	TOY	TREC	TRM	YTH YTW	HGCT	QVT	LRA	TGMS	GRMS	GRMG (1)	VTI (1)	RMI	WPI	CWRP	QTP	ROWP	BAP	
	gauge widening ratio greater than allowed.																									
333.10	Failure to equip at least one vehicle per day with required accelerometers.															x										
333.11	Failure to have written procedures for notification of track personnel when daily accelerometer measurements indicate a possible track-related condition.															x										
333.12	Failure to follow written procedures for notification of track personnel when daily accelerometer measurements indicate a possible track-related condition.															x										
333.13	Failure to operate an instrumented car or portable device to measure carbody and truck frame accelerations at required frequency.															x										
333.14	Failure to reduce train speeds when carbody and truck frame accelerations exceed allowable.															x										
333.15	Failure to keep records of acceleration measurements as required.															x										
333.16	Failure to operate an inspection vehicle with instrumented wheelsets to measure wheel/rail forces at required frequency.															x										
333.17	Failure to reduce train speed when wheel/rail forces exceed allowable.															x										
333.18	Failure to keep record of wheel/rail force measurements as required.									x																
334.01	Insufficient Ballast			x	x	x		x	x			x														
334.02	Fouled Ballast			x	x	x		x	x			x														
335.01	Fewer than minimum allowable number of non-defective ties per 39 feet.			x	x	x		x	x			x														
335.02	No effective support ties within the prescribed distance from a joint.			x	x	x		x	x			x														
335.03	Crossties not effectively distributed to support a 39-foot segment of track.			x	x	x		x	x			x														
335.04	Reserved																									
335.05	Reserved																									
335.06	Track constructed without crossties does not effectively support track structure.			x	x	x		x	x			x														
335.07	Fewer than three non-defective ties each side of an effective tie.			x	x	x		x	x			x														
335.08	Less than nine out of 10 consecutive ties with tie plates.			x	x	x		x	x			x														
335.09	Metal object causing concentrated load between			x	x	x		x	x			x														

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	base of rail and bearing surface of tie plate.																									
335.10	Insufficient tie plates.			X	X	X		X	X			X														
337.01	Transverse Fissure			X	X	X		X	X			X														
337.02	Compound Fissure			X	X	X		X	X			X														
337.03	Horizontal Split Head			X	X	X		X	X			X														
337.04	Vertical Split Head			X	X	X		X	X			X														
337.05	Split Web			X	X	X		X	X			X														
337.06	Piped Rail			X	X	X		X	X			X														
337.07	Bolt-Hole Crack			X	X	X		X	X			X														
337.08	Head Web Separation			X	X	X		X	X			X														
337.09	Broken Base			X	X	X		X	X			X														
337.10	Detail Fracture			X	X	X		X	X			X														
337.11	Engine Burn Fracture			X	X	X		X	X			X														
337.12	Ordinary Break			X	X	X		X	X			X														
337.13	Broken or Defective Weld			X	X	X		X	X			X														
337.14	Damaged Rail			X	X	X		X	X			X														
337.15	Flattened Rail			X	X	X		X	X			X														
339.01	Failure to inspect rail for internal defects at required frequency.			X	X	X		X	X			X														
339.02	Failure of equipment to inspect rail at joints.			X	X	X		X	X			X														
339.03	Defective rail not marked properly.			X	X	X		X	X			X														
339.04	Failure to reduce operating speed until valid rail inspection is performed.			X	X	X		X	X			X														
341.01	Failure to conduct initial inspection of new rail.			X	X	X		X	X			X									X	X				
341.02	Failure to inspect new welds made in new or used rail.			X	X	X		X	X			X									X	X				
341.03	Failure to clearly mark rail defect found during initial inspection of new rail and welds.			X	X	X		X	X			X									X	X				
343.01	Failure of track owner to develop and implement written CWR procedures.																						X			
343.02	Failure to comply with written CWR procedures.																						X			
343.03	Failure of track owner to develop a training program for the implementation of their written CWR procedures.																						X			
343.04	Failure to keep CWR records as required.																						X			
345.01	Failure to conduct qualification testing as required.													X										X		
345.02	Operation at Class 6 and above speeds without approval of the FRA Associate Administrator for Safety.													X										X		
347.01	Highway/rail crossings or rail-to-rail crossings at-			X	X	X		X	X			X														

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	grade are present on Class 8 and 9 track.																									
347.02	Unapproved warning/barrier systems on class 7 track.			x	x	x		x	x			x													x	x
349.01	Rail-end mismatch on tread of rail exceeds allowable.			x	x	x		x	x			x														
349.02	Rail-end mismatch on gage side of rail exceeds allowable.			x	x	x		x	x			x														
351.01	Rail joint not of structurally sound design and dimension.			x	x	x		x	x			x														
351.02	Cracked or broken joint bar (other than center-break).			x	x	x		x	x			x														
351.03	Center cracked or broken joint bar.			x	x	x		x	x			x														
351.04	Worn joint bar allows vertical movement of rail in joint.			x	x	x		x	x			x														
351.05	Less than 2 bolts per rail at each joint for conventional jointed rail.			x	x	x		x	x			x														
351.06	Reserved																									
351.07	Less than 2 bolts per rail at any joint in continuous welded rail.			x	x	x		x	x			x														
351.08	Loose joint bars.			x	x	x		x	x			x														
351.09	Torch-cut or burned-bolt hole.			x	x	x		x	x			x														
351.10	Joint bar reconfigured by torch cutting.			x	x	x		x	x			x														
352.01	Torch cut rail applied for other than emergency.			x	x	x		x	x			x														
352.02	Failure to remove torch cut rails within specified time frame.			x	x	x		x	x			x														
352.03	Failure to remove non-inventoried torch cut rail within 30 days of discovery.			x	x	x		x	x			x														
352.04	Reserved																									
352.05	Train speed exceeds allowable over torch cut rail.			x	x	x		x	x			x														
353.01	Loose, worn, or missing switch clips.			x	x	x		x	x																	
353.02	Loose, worn, or missing clip bolts (transit, side jaw, eccentric, vertical).			x	x	x		x	x																	
353.03	Loose, worn, or defective connecting rod.			x	x	x		x	x																	
353.04	Loose, worn, or defective connecting rod fastening.			x	x	x		x	x																	
353.05	Loose, worn, or defective switch rod.			x	x	x		x	x																	
353.06	Loose, worn, or missing switch rod bolts.			x	x	x		x	x																	
353.07	Worn or missing cotter pins.			x	x	x		x	x																	
353.08	Loose or missing rigid rail braces.			x	x	x		x	x																	
353.09	Loose or missing adjustable rail braces.			x	x	x		x	x																	
353.10	Missing switch, frog, or guard rail plates.				x	x		x	x																	

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353.11	Loose or missing switch point stops.				X	X		X	X																
353.12	Loose, worn, or missing frog bolts.				X	X		X	X																
353.13	Loose, worn, or missing guard rail bolts.				X	X		X	X																
353.14	Loose, worn or missing guard rail clamps, wedge, separator block, or end block.				X	X		X	X																
353.15	Obstruction between switch point and stock rail.				X	X		X	X																
353.16	Obstruction in flangeway of frog.				X	X		X	X																
353.17	Obstruction in flangeway of guard rail.				X	X		X	X																
353.18	Insufficient anchorage to restrain rail movement.				X	X		X	X																
353.19	Flangeway less than 1-1/2 inches wide.				X	X		X	X																
353.20	Stock rail not securely seated in switch plates.				X	X		X	X																
353.21	Stock rail canted by overtightening rail braces.				X	X		X	X																
353.22	Improper fit between switch point and stock rail.				X	X		X	X																
353.23	Outer edge of wheel contacting gage side of stock rail.				X	X		X	X																
353.24	Excessive lateral or vertical movement of switch point.				X	X		X	X																
353.25	Heel of switch insecure.				X	X		X	X																
353.26	Insecure switch stand or switch machine.				X	X		X	X																
353.27	Insecure connecting rod.				X	X		X	X																
353.28	Throw lever operable with switch lock or keeper in place.				X	X		X	X																
353.29	Switch position indicator not clearly visible.				X	X		X	X																
353.30	Unusually chipped or worn switch point.				X	X		X	X																
353.31	Improper switch closure due to metal flow.				X	X		X	X																
353.32	Insufficient flangeway depth.				X	X		X	X																
353.33	Frog point chipped, broken, or worn in excess of allowable.				X	X		X	X																
353.34	Tread portion of frog worn in excess of allowable.				X	X		X	X																
353.99	Severe frog condition not otherwise provided				X	X		X	X																
353.35	Outer edge of wheel contacting side of spring wing rail.							X	X																
353.36	Toe of wing rail not fully bolted and tight.							X	X																
353.37	Ties under or wing rail not solidly tamped.							X	X																
353.38	Bolt-hole defect in frog.							X	X																
353.39	Head and web separation in frog.							X	X																
353.40	Insufficient tension in spring to hold wing rail against point rail.							X	X																
353.41	Excessive clearance between hold-down housing and horn							X	X																

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353.42	Turnout or crossover not being maintained in accordance with Guidebook.							X	X			X														
353.43	Lift rail assembly or other transition device on moveable bridge not being maintained in accordance with Guidebook.														X											
355.01	Guard check gage less than allowable.				X	X		X	X																	
355.02	Guard face gage exceeds allowable.				X	X		X	X																	
355.03	Cracked or broken guard rail.				X	X		X	X																	
357.01	Derail not clearly visible.		X																							
357.02	Derail operable when locked.		X																							
357.04	Improper size derail.		X																							
357.05	Improperly installed derail.		X																							
357.06	Loose, worn, or defective parts of derail.		X																							
357.07	Derail not present when required		X																							
357.08	Derailing device not of proper design to physically stop or divert movement		X																							
357.09	Derail not interconnected to the signal system when required		X																							
361.01	Failure to provide Right of Way plan																								X	
361.02	Failure of Right of Way plan to contain required information																								X	
365.01	Track inspected by other than qualified designated individual.			X	X	X		X	X			X														
365.02	Track being inspected at excessive speed.			X	X	X		X	X			X														
365.03	Failure to inspect at required frequency.									X																
365.04	Failure to initiate remedial action for deviations found.			X	X	X		X	X	X		X														
365.05	One Inspector inspecting more than two tracks.			X						X		X														
365.06	Two Inspectors inspecting more than four tracks.			X						X		X														
365.07	Inspection performed on track outside of maximum allowable track center distances.			X						X		X														
365.08	Main track not traversed within the required frequency.									X																
365.09	Siding track not traversed within the required frequency.									X																
365.10	Failure to inspect turnouts at required frequency.									X																
365.11	Failure to inspect track crossings at required frequency.									X																
365.12	Failure to inspect lift rail assemblies or other transition devices on moveable bridges at required frequency									X																

Appendix E - Activity/Defect Code Matrix																										
Defect Codes		Activity Codes																								
Code	Description	ATIP (1)	DER	MTH MTW	RXM	RXY	SPCL	TOM	TOY	TREC	TRM	YTH YTW	HGCT	QVT	LRA	TGMS	GRMS	GRMG (1)	VTI (1)	RMI	WPI	CWRP	QTP	ROWP	BAP	
365.13	Failure to operate a train at 100 m.p.h. or less after an eight hour period with no train operation									x																
367.01	Failure to conduct special inspections when required.									x																
369.01	Failure to keep records as required.									x																
369.02	Failure of Inspector to complete report at time of inspection.									x																
369.03	Failure of Inspector to sign report.									x																
369.04	Failure of Inspector to provide required information.									x																
369.05	Failure of rail inspection record to provide required information.									x																
369.06	Failure to make records available for copying and inspection.									x																
369.07	Electronic system does not maintain the integrity of each record.									x																
369.08	Electronic system allows record or amendments to be modified.									x																
369.09	Electronic amendments not stored separately from record.									x																
369.10	Person making electronic amendment not identified.									x																
369.11	Electronic system corrupts or losses data.									x																
369.12	Paper copies of records not made available for inspection and copying.									x																
369.13	Inspection reports not available to Inspector or subsequent Inspectors.									x																
369.14	Electronic storage not initiated within 24 hours.									x																

Notes:

(1) No defects permitted from this type of vehicle (separate report with appropriate source code for field verified defects)