

A10: Track Cost Global Evaluation



TABLE A
Midwest Regional Rail System Phase 5
Summary of Infrastructure Costs

Revision Date: 4/18/03

(All numbers in thousands)

No.	Route	Cost Estimate Phase 5 Year 2002 Dollars	Cost Estimate Phase 3B Year 2002 Dollars
a	Chicago Terminal Area	\$ 1,152,115	\$ 475,059
b	System Maintenance Facility	\$ 45,351	N. A.
c	Chicago Union Station	\$ 15,000	N. A.
1	Porter to Detroit / Pontiac	\$ 329,771	\$ 214,963
2	Battle Creek to Port Huron	\$ 67,029	\$ 59,700
3	Kalamazoo to Grand Rapids / Holland	\$ 27,178	\$ 21,942
4	Tolleston to Cleveland	\$ 1,087,640	\$ 599,559
5	Tolleston to Cincinnati	\$ 507,468	\$ 386,489
6	Grand Crossing to Carbondale	\$ 219,878	\$ 265,864
7	Joliet to St. Louis	\$ 243,256	\$ 195,138
8	St. Louis to Kansas City	\$ 314,318	\$ 295,937
9	Aurora to Quincy	\$ 257,362	\$ 219,641
10	Wyanet to Omaha	\$ 360,207	\$ 225,767
11	Rondout to St. Paul	\$ 1,049,791	\$ 733,191
12	Milwaukee to Green Bay	\$ 311,717	\$ 35,864
TOTAL		\$ 5,988,079	\$ 3,729,114

Notes:

This MWRRRI Phase 5 Cost Estimate represents an update of the original Phase 3B Estimate prepared in 1997.

Data for track lengths, alignment, and location of bridges and grade crossings was taken from Trackfiles prepared by TEMS.

Input regarding Maintenance Facility, Service and Inspection Facility and Layover Facility locations and costs were provided by Amtrak.



TABLE B
MWRRRI PHASE 5
CHICAGO TERMINAL AREA LIMITS

Revision Date: 3/30/03

Segment	Lump Sum Cost (in Thousands)
South of the Lake Corridor:	
Chicago to Buffington Harbor	\$ 265,000
Buffington Harbor to Tolleston	\$ 64,000
Buffington Harbor to Porter	\$ 315,000
Total South of the Lake Corridor	\$ 644,000
Grand Crossing Improvements	\$ 12,000
Chicago to Joliet	
Joliet Interlocking and Tunnel / Station	\$20,000
Corwith to Argo	\$ 901
Argo to Lemont	\$ 8,533
Lemont to Joliet	\$ 3,381
Metra Heritage Corridor Grade Separation	\$168,300
Total Chicago to Joliet	\$ 201,115
Chicago to Aurora	\$ 20,000
Chicago to Rondout (from 1995 Chicago to Milwaukee Study)	\$ 275,000
TOTAL	\$ 1,152,115

The Chicago end of the Detroit, Cleveland, Cincinnati and Carbondale routes are under further detailed study as a part of the South-of-the-Lake corridor study by Amtrak, MDOT and INDOT. From Chicago Union Station (CUS) to Englewood and Grand Crossing, these four routes will continue to share the corridor along the NS right-of-way. From Englewood to Grand Crossing, construction of new double track is proposed. The South-of-the-Lake Corridor infrastructure cost estimate from CUS to Grand Crossing is about \$161.5 million.

An additional \$12 million placeholder is included in the MWRRS cost estimates for a new track connection at Grand Crossing to the CN/IC tracks toward Carbondale.

The St. Louis route will continue share Metra's route from CUS to Joliet. The proposed passenger service will co-mingle with Metra and the host freight carrier trains at maximum speeds of 79 mph through this segment. Amtrak has proposed that the passenger platforms at the Joliet station be reconfigured to improve freight and passenger train movements through the interlocking. A \$20 million placeholder cost is included in the estimates to cover a new interlocking, platforms and tunnels at the Metra/Amtrak Station in Joliet. Additionally, a placeholder of \$168 million has been included for the Metra Heritage Corridor grade separation program.

Capital cost estimates for the St Louis to Kansas City route and the Cleveland to Toledo segment are subject to change

The Quincy route will continue to share Metra's route from CUS to Aurora. The proposed passenger service will co-mingle with Metra and the host freight carrier trains at maximum speeds of 79 mph through this segment. A \$20 million placeholder cost is included in the estimates for track and signal improvements, including new interlockings and crossovers.

For the Chicago to Rondout segment, cost estimates from the 1995 Tri-State study were used for the MWRRS estimate. Since 1995, Metra traffic volume has increased and new Metra stations have been added along this segment. To account for these developments, the 1995 costs were inflated to 2002 dollars and further increased by 50%.

Chicago to Milwaukee Costs from 1995 Chicago to Milwaukee Study	
Total Cost (in 1993 Dollars, includes 7% Engineering and 15% Contingencies)	143,793,074
Inflate to 2002 costs	183,235,514
Add 50%	91,617,757
TOTAL	274,853,271



TABLE C
MWRRRI PHASE 5
Itemized Costs by Route
 Revision Date: 3/24/03

Item No.	Description	Unit	YR 2002 Unit Cost (1000s)	Chicago Terminal Limits		Porter to Detroit / Pontiac		Battle Creek to Port Huron		Kalamazoo to Grand Rapids / Holland		Tolleston to Cleveland		Tolleston to Cincinnati		Grand Crossing to Carbondale			
				Maximum Authorized Speed		110 mph		110 mph		79 mph		79 mph		110 mph		110 mph		90 mph	
				Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork																			
1.1	HSR on Existing Roadbed	per mile	\$ 993			26	25,818	12.0	11,916	-	-	-	-	-	-	-	-		
1.2a	HSR on New Roadbed	per mile	\$ 1,059			-	-	-	-	-	-	33	34,534	123	130,469	-	-		
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492			-	-	-	-	-	-	91	135,623	-	-	-	-		
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674			-	-	-	-	-	-	-	-	-	-	-	-		
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222			48	10,567	157.6	34,987	78.3	17,372	83	18,426	106	23,488	331	73,413		
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331			152	50,147	-	-	-	-	135	44,794	56	18,569	-	-		
1.5	Relay Track w/ 136# CWR	per mile	\$ 354			99	35,081	-	-	-	-	-	-	20	7,080	-	-		
1.6	Freight Siding	per mile	\$ 912			2	1,824	-	-	1.0	912	-	-	7	6,384	-	-		
1.65	Passenger Siding	per mile	\$ 1,376			17	23,392	-	-	-	-	62	85,312	31	42,656	13	17,888		
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51			189	9,633	-	-	-	-	229	11,689	228	11,632	239	12,199		
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153			57	8,723	-	-	-	-	80	12,259	43	6,543	45	6,862		
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175			-	-	-	-	-	-	-	-	-	-	-	-		
1.74	Decorative Fencing (both sides)	per mile	\$ 394			12	4,651	-	-	-	-	15	5,940	14	5,616	15	5,890		
Total Track Costs							\$ 169,836		\$ 46,903		\$ 18,284		\$ 348,577		\$ 252,437		\$ 116,253		
Turnouts and Crossovers																			
4.1	#24 High Speed Turnout	each	\$ 450			6	2,700	-	-	-	-	26	11,700	10	4,500	2	900		
4.2	#20 Turnout Timber	each	\$ 124			14	1,736	18.0	2,232	-	-	43	5,332.0	20	2,480	12	1,488		
4.3	#10 Turnout Timber	each	\$ 69			-	-	-	-	-	-	64	4,416.0	8	552	-	-		
4.4	#20 Turnout Concrete	each	\$ 249			-	-	-	-	-	-	25	6,225.0	-	-	-	-		
4.5	#10 Turnout Concrete	each	\$ 118			-	-	-	-	-	-	10	1,180.0	-	-	-	-		
Total Turnouts Cost							\$ 4,436		\$ 2,232		\$ -		\$ 28,853		\$ 7,532		\$ 2,388		
Curves																			
9.1	Elevate & Surface Curves	per mile	\$ 58			30	1,729	-	-	-	-	3.6	206	20	1,137	5	318		
9.3	Elastic Fasteners	per mile	\$ 82			30	2,445	-	-	-	-	3.6	291	20	1,607	5	450		
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	varies			-	2,879	-	-	-	-	-	214	-	2,932	-	307		
Total Curves Cost							\$ 7,053		\$ -		\$ -		\$ 711		\$ 5,676		\$ 1,075		
Signals																			
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268			4	5,072	-	-	-	-	13	16,484	4	5,072	1	1,268		
8.2	Install CTC System (Single Track)	per mile	\$ 183			-	-	-	-	-	-	285.2	52,197.1	285	52,173	-	-		
8.21	Install CTC System (Double Track)	per mile	\$ 300			-	-	-	-	-	-	12.0	3,600	-	-	-	-		
8.3	Install PTC System	per mile	\$ 197			143	28,191	-	-	-	-	268	52,841	163	32,013	299	58,903		
8.4	Electric Lock for Industry Turnout	each	\$ 103			-	-	-	-	-	-	74.0	7,622	14	1,442	-	-		
8.5	Signals for Crossover	each	\$ 700			6	4,200	5.0	3,500	-	-	15.0	10,500	4	2,800	4	2,800		
8.6	Signals for Turnout	each	\$ 400			2	800	8.0	3,200	-	-	10.0	4,000	10	4,000	4	1,600		
Total Signals Cost							\$ 38,263		\$ 6,700		\$ -		\$ 147,244		\$ 97,500		\$ 64,571		



TABLE C
MWRR PHASE 5
Itemized Costs by Route
 Revision Date: 3/24/03

				Chicago Terminal Limits		Porter to Detroit / Pontiac		Battle Creek to Port Huron		Kalamazoo to Grand Rapids / Holland		Tolleston to Cleveland		Tolleston to Cincinnati		Grand Crossing to Carbondale	
Maximum Authorized Speed				110 mph		110 mph		79 mph		79 mph		110 mph		110 mph		90 mph	
Item No.	Description	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Stations / Facilities																	
2.1	Full Service - New	each	\$ 1,000									1.0	1,000.0			1	1,000
2.2	Full Service - Renovated	each	\$ 500			11	5,500	4	2,000	2	1,000	2	1,000	4	2,000	7	3,500
2.3	Terminal - New	each	\$ 2,000									1	2,000				
2.4	Terminal - Renovated	each	\$ 1,000			1	1,000	1	1,000			6	6,000	2	2,000	1	1,000
2.6	Layover Facility	lump sum	varies					1	5,544	1	5,544					1	5,544
2.7	Service & Inspection Facility	lump sum	varies									1	18,974	1	17,682		
Total Station Cost							\$ 6,500		\$ 8,544		\$ 6,544		\$ 28,974		\$ 21,682		\$ 11,044
Bridges-under																	
5.1	Four Lane Urban Expressway	each	\$ 4,835														
5.2	Four Lane Rural Expressway	each	\$ 4,025														
5.3	Two Lane Highway	each	\$ 3,054			11	33,594					6	18,324				
5.4	Rail	each	\$ 3,054											3	9,162		
5.5	Minor river	each	\$ 810									45	36,450	11	8,910		
5.6	Major River	each	\$ 8,098														
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7											3,510	16,415		
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4														
5.73	Single Track on Flyover Structure	per LF	\$ 6.0									3,100	18,600				
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0									6,500	19,500				
Total Bridges-under Cost							\$ 33,594		\$ -		\$ -		\$ 92,874		\$ 34,487		\$ -
Bridges-over																	
6.1	Four Lane Urban Expressway	each	\$ 2,087									3	6,261				
6.2	Four Lane Rural Expressway	each	\$ 2,929									3	8,787				
6.3	Two Lane Highway	each	\$ 1,903									2	3,806				
6.4	Rail	each	\$ 6,110									1	6,110				
Total Bridges-over Cost							\$ -		\$ -		\$ -		\$ 24,964		\$ -		\$ -
Crossings																	
7.1	Private Closure	each	\$ 83			22	1,826					21	1,743	27	2,241	29	2,407
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492									46	22,632	11	5,412		
7.3	Four Quadrant Gates	each	\$ 288			9	2,592					69	19,872	31	8,928		
7.31	Convert Dual Gates to Quad Gates	each	\$ 150			47	7,050							27	4,050		
7.4a	Conventional Gates single mainline track	each	\$ 166			49	8,134					195	32,370	144	23,904	90	14,940
7.4b	Conventional Gates double mainline track	each	\$ 205			12	2,460					14	2,870				
7.41	Convert Flashers Only to Dual Gate	each	\$ 50			10	500	53.0	2,650	47	2,350	29	1,450	25	1,250		
7.5a	Single Gate with Median Barrier	each	\$ 180			46	8,280							32	5,760		
7.5b	Convert Single Gate to Extended Arm	each	\$ 15			45	675							84	1,260		
7.71	Precast Panels without Rdway Improvements	each	\$ 80									16	1,280	262	20,960	90	7,200
7.72	Precast Panels with Rdway Improvements	each	\$ 150									311	46,650	87	13,050		
7.8	Michigan Type Grade Crossing Surface	each	\$ 15			218	3,270										
Total Crossings Cost							34,787		2,650		2,350		128,867		86,815		24,547
Subtotals							294,469		67,029		27,178		801,064		506,129		219,878
Placeholders					1,152,115		35,302						314,268		29,030		
Adjustment for Allocation of Tolleston to Wanatah													-27,691		-27,691		
TOTAL					1,152,115		329,771		67,029		27,178		1,087,640		507,468		219,878



TABLE C
MWRRRI PHASE 5
Itemized Costs by Route
 Revision Date: 3/24/03

				Joliet to St. Louis		St. Louis to Kansas City		Aurora to Quincy		Wyanet to Omaha		Rondout to St. Paul		Milwaukee to Green Bay		Total	
Maximum Authorized Speed				110 mph		90 mph		90 mph		79 mph		110 mph		110 mph			
Item No.	Description	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork																	
1.1	HSR on Existing Roadbed	per mile	\$ 993	-	-	-	-	-	-	-	-	-	-	-	-	38	\$ 37,734
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	-	-	-	-	-	-	-	75	79,531	38	40,242	269	\$ 284,776
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-	-	3	4,476	-	-	26	38,941	51	76,092	171	\$ 255,132
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-	-	-	-	-	-	-	-	10	26,740	10	\$ 26,740
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	48	10,638	-	-	341	75,613	-	-	234	51,881	22	4,884	1,447	\$ 321,270
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	-	388	128,564	-	-	325	107,410	-	-	-	-	1,056	\$ 349,483
1.5	Relay Track w/ 136# CWR	per mile	\$ 354	-	-	-	-	-	-	54	19,116	-	-	-	-	173	\$ 61,277
1.6	Freight Siding	per mile	\$ 912	-	-	-	-	5	4,560	3	2,736	-	-	10	9,120	28	\$ 25,536
1.65	Passenger Siding	per mile	\$ 1,376	-	-	-	-	18	24,768	19	26,144	50	68,800	-	-	210	\$ 288,960
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	31	1,603	-	-	159	8,109	-	-	211	10,747	68	3,468	1,355	\$ 69,081
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	8	1,208	-	-	70	10,710	-	-	40	6,045	21	3,213	363	\$ 55,563
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	2	344	-	-	-	-	-	-	-	-	-	-	2	\$ 344
1.74	Decorative Fencing (both sides)	per mile	\$ 394	1	394	-	-	30	11,820	-	-	13	5,189	5	1,970	105	\$ 41,470
Total Track Costs					\$ 14,187		\$ 128,564		\$ 140,056		\$ 155,406		\$ 261,134		\$ 165,729		\$ 1,817,366
Turnouts and Crossovers																	
4.1	#24 High Speed Turnout	each	\$ 450	-	-	22	9,900	4	1,800	8	3,600	10	4,500	4	1,800	92	\$ 41,400
4.2	#20 Turnout Timber	each	\$ 124	4	496	-	-	16	1,984	2	248	-	-	-	-	129	\$ 15,996
4.3	#10 Turnout Timber	each	\$ 69	-	-	-	-	12	828	8	552	-	-	-	-	92	\$ 6,348
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-	-	-	-	-	-	-	-	-	-	25	\$ 6,225
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-	-	-	-	-	-	-	-	-	-	10	\$ 1,180
Total Turnouts Cost					\$ 496		\$ 9,900		\$ 4,612		\$ 4,400		\$ 4,500		\$ 1,800		\$ 71,149
Curves																	
9.1	Elevate & Surface Curves	per mile	\$ 58	2	99	85	4,921	25	1,436	-	-	41	2,381	6	348	217	\$ 12,574
9.3	Elastic Fasteners	per mile	\$ 82	2	139	85	6,957	25	2,030	-	-	41	3,366	6	492	217	\$ 17,778
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	varies	-	198	-	20,368	-	1,560	-	-	-	10,975	-	629	-	\$ 40,061
Total Curves Cost					\$ 436		\$ 32,245		\$ 5,027		\$ -		\$ 16,722		\$ 1,469		\$ 70,413
Signals																	
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	-	-	-	4	5,072	-	-	5	6,340	2	2,536	33	\$ 41,844
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	-	-	-	-	-	325	59,384	-	-	60	10,980	955	\$ 174,734
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-	-	-	-	-	-	84	25,110	-	-	96	\$ 28,710
8.3	Install PTC System	per mile	\$ 197	37	7,269	282	55,635	218	43,017	-	-	224	44,128	83	16,351	1,718	\$ 338,348
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-	-	-	-	8	824	-	-	-	-	96	\$ 9,888
8.5	Signals for Crossover	each	\$ 700	-	-	-	-	7	4,900	-	-	-	-	-	-	41	\$ 28,700
8.6	Signals for Turnout	each	\$ 400	-	-	22	8,800	4	1,600	16	6,400	-	-	-	-	76	\$ 30,400
Total Signals Cost					\$ 7,269		\$ 64,435		\$ 54,589		\$ 66,608		\$ 75,578		\$ 29,867		\$ 652,623



TABLE C
MWRRI PHASE 5
Itemized Costs by Route
 Revision Date: 3/24/03

				Joliet to St. Louis		St. Louis to Kansas City		Aurora to Quincy		Wyanet to Omaha		Rondout to St. Paul		Milwaukee to Green Bay		Total	
Maximum Authorized Speed				110 mph		90 mph		90 mph		79 mph		110 mph		110 mph			
Item No.	Description	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Stations / Facilities																	
2.1	Full Service - New	each	\$ 1,000	-	-	-	-	-	-	-	-	1	1,000	6	6,000	9	\$ 9,000
2.2	Full Service - Renovated	each	\$ 500	7	3,500	8	4,000	7	3,500	5	2,500	11	5,500	1	500	69	\$ 34,500
2.3	Terminal - New	each	\$ 2,000	-	-	-	-	-	-	-	-	1	2,000	-	-	2	\$ 4,000
2.4	Terminal - Renovated	each	\$ 1,000	1	1,000	1	1,000	-	-	1	1,000	-	-	-	-	14	\$ 14,000
2.6	Layover Facility	lump sum	varies	-	-	1	5,544	1	5,544	1	6,536	1	6,536	1	6,536	8	\$ 47,328
2.7	Service & Inspection Facility	lump sum	varies	1	21,406	-	-	-	-	1	17,069	2	35,362	-	-	6	\$ 110,494
Total Station Cost					\$ 25,906		\$ 10,544		\$ 9,044		\$ 27,105		\$ 50,398		\$ 13,036		\$ 219,322
Bridges-under																	
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-	-	-	-	-	-	-	-	-	\$ -
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-	-	-	-	-	-	-	-	-	\$ -
5.3	Two Lane Highway	each	\$ 3,054	-	-	-	-	-	-	-	-	1	3,054	10	30,540	28	\$ 85,512
5.4	Rail	each	\$ 3,054	-	-	-	-	-	-	-	-	-	-	1	3,054	4	\$ 12,216
5.5	Minor river	each	\$ 810	-	-	-	-	-	-	-	-	-	-	9	7,290	65	\$ 52,650
5.6	Major River	each	\$ 8,098	-	-	-	-	-	-	-	-	-	-	1	8,098	1	\$ 8,098
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7	-	-	-	-	570	2,666	-	-	720	3,367	-	-	4,800	\$ 22,448
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	180	1,684	-	-	600	5,612	-	-	1,170	10,943	-	-	1,950	\$ 18,239
5.73	Single Track on Flyover Structure	per LF	\$ 6.0	-	-	-	-	-	-	-	-	-	-	-	-	3,100	\$ 18,600
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-	-	-	-	-	-	-	-	6,500	\$ 19,500
Total Bridges-under Cost					\$ 1,684		\$ -		\$ 8,278		\$ -		\$ 17,365		\$ 48,982		\$ 237,263
Bridges-over																	
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-	-	-	-	-	-	-	-	3	\$ 6,261
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-	-	-	-	-	-	2	5,858	5	\$ 14,645
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-	-	-	-	-	-	2	3,806	4	\$ 7,612
6.4	Rail	each	\$ 6,110	-	-	-	-	-	-	-	-	-	-	-	-	1	\$ 6,110
Total Bridges-over Cost					\$ -		\$ -		\$ -		\$ -		\$ -		\$ 9,664		\$ 34,628
Crossings																	
7.1	Private Closure	each	\$ 83	2	166	28	2,324	22	1,826	-	-	30	2,490	46	3,818	227	\$ 18,841
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-	-	-	-	-	-	-	-	57	\$ 28,044
7.3	Four Quadrant Gates	each	\$ 288	15	4,320	55	15,840	-	-	-	-	144	41,472	34	9,792	357	\$ 102,816
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	6	900	86	12,900	-	-	-	-	17	2,550	-	-	183	\$ 27,450
7.4a	Conventional Gates single mainline track	each	\$ 166	5	830	66	10,956	10	1,660	149	24,734	81	13,446	-	-	789	\$ 130,974
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	-	154	31,570	-	-	-	-	-	-	180	\$ 36,900
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	9	450	1	50	11	550	79	3,950	20	1,000	-	-	284	\$ 14,200
7.5a	Single Gate with Median Barrier	each	\$ 180	-	-	-	-	-	-	-	-	-	-	74	13,320	152	\$ 27,360
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	-	-	-	-	-	-	-	-	-	-	-	129	\$ 1,935
7.71	Precast Panels without Rdway Improvements	each	\$ 80	20	1,600	207	16,560	-	-	-	-	40	3,200	28	2,240	663	\$ 53,040
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-	-	-	-	222	33,300	80	12,000	700	\$ 105,000
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	-	-	-	10	150	149	2,235	-	-	-	-	377	\$ 5,655
Total Crossings Cost					8,266		58,630		35,756		30,919		97,458		41,170		\$ 552,215
Subtotals					58,244		304,318		257,362		284,437		523,156		311,717		3,654,980
Placeholders					185,011		10,000				75,770		526,635				2,328,130
Adjustment for Allocation of Tolleston to Wanatah																	-55,383
TOTAL					243,256		314,318		257,362		360,207		1,049,791		311,717		5,927,728



TABLE D-1
MWRRI PHASE 5
Chicago to Detroit
 Revision Date: 3/24/03

Chicago Terminal Area Limit

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1 Chicago to Porter NS MP 523 to MP 482.21 40.79 miles 110 mph		Segment 2 Porter to Kalamazoo Amtrak MP 241 - MP 143 98.0 miles 110 mph		Segment 3 Kalamazoo to Battle Ck NS MP 143 - MP 121.5 21.5 miles 110 mph		Segment 4 Battle Ck to W Det NS MP 119.6 to MP 3 116.6 miles 110 mph		Segment 5 W. Detroit to Milw. Jct. CR Shared Assets MP 3 to MP 4.2 5.3 miles 60 mph		Segment 6 Milw. Jct. to Pontiac CN MP 4.2 to MP 25.8 21.6 miles 79 mph		Total 303.8 miles	
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork																
1.1	HSR on Existing Roadbed	per mile	\$ 993	-	25	24,825	1	993	-	-	-	-	-	-	26	25,818
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-	-	-	-	-	-	-	-	-	-	-
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	-	-	-	-	26	5,772	-	-	-	21.6	4,795	48	10,567
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	38.5	12,744	22.4	7,414	90.6	29,989	-	-	-	-	152	50,147
1.5	Relay Track w/ 136# CWR	per mile	\$ 354	-	8.5	3,009	-	-	90.6	32,072	-	-	-	-	99	35,081
1.6	Freight Siding	per mile	\$ 912	-	-	-	-	2	1,824	-	-	-	-	-	2	1,824
1.65	Passenger Siding	per mile	\$ 1,376	-	15	20,640	-	-	2	2,752	-	-	-	-	17	23,392
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	-	78	3,998	17	877	93	4,757	-	-	-	-	189	9,633
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	-	15	2,249	3	493	17	2,676	-	-	21.6	3,305	57	8,723
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	-	-	-	-	-	-	-	-	-	-	-	-	-
1.74	Decorative Fencing (both sides)	per mile	\$ 394	-	5	1,931	1	424	6	2,297	-	-	-	-	12	4,651
Total Track Costs				-	-	69,396	10,202	82,139	-	8,100	-	-	-	-	169,836	
Turnouts																
4.1	#24 High Speed Turnout	each	\$ 450	-	4	1,800	2	900	-	-	-	-	-	-	6	2,700
4.2	#20 Turnout Timber	each	\$ 124	-	4	496	-	-	10	1,240	-	-	-	-	14	1,736
4.3	#10 Turnout Timber	each	\$ 69	-	-	-	-	-	-	-	-	-	-	-	-	-
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-	-	-	-	-	-	-	-	-	-	-
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Turnouts Cost				-	-	2,296	900	1,240	-	-	-	-	-	-	4,436	
Curves																
9.1	Elevate & Surface Curves	per mile	\$ 58	-	12.2	708	4.0	229	13.7	792	-	-	-	-	30	1,729
9.3	Elastic Fasteners	per mile	\$ 82	-	12.2	1,001	4.0	324	13.7	1,119	-	-	-	-	30	2,445
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -	-	-	721	-	642	-	1,517	-	-	-	-	-	2,879
Total Curves Cost				-	-	2,430	1,195	3,428	-	-	-	-	-	-	7,053	
Signals																
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	2	2,536	1	1,268	-	-	-	-	1	1,268	4	5,072
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	-	-	-	-	-	-	-	-	-	-	-	-
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-	-	-	-	-	-	-	-	-	-	-
8.3	Install PTC System	per mile	\$ 197	-	38	7,486	14.5	2,857	90.6	17,848	-	-	-	-	143	28,191
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-	-	-	-	-	-	-	-	-	-	-
8.5	Signals for Crossover	each	\$ 700	-	2	1,400	-	-	4	2,800	-	-	-	-	6	4,200
8.6	Signals for Turnout	each	\$ 400	-	-	-	-	-	2	800	-	-	-	-	2	800
Total Signals Cost				-	-	11,422	4,125	21,448	-	1,268	-	-	-	-	38,263	
Stations / Facilities																
2.1	Full Service - New	each	\$ 1,000	-	-	-	-	-	-	-	-	-	-	-	-	-
2.2	Full Service - Renovated	each	\$ 500	-	4	2,000	1	500	4	2,000	-	-	2	1,000	11	5,500
2.3	Terminal - New	each	\$ 2,000	-	-	-	-	-	-	-	-	-	-	-	-	-
2.4	Terminal - Renovated	each	\$ 1,000	-	-	-	-	-	-	-	-	-	1	1,000	1	1,000
2.6	Layover Facility	lump sum	\$ -	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	Service & Inspection Facility	lump sum	\$ -	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Station Cost				-	-	2,000	500	2,000	-	2,000	-	-	-	2,000	6,500	



TABLE D-1
MWRRRI PHASE 5
Chicago to Detroit
 Revision Date: 3/24/03

Chicago Terminal Area Limit

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1 Chicago to Porter NS MP 523 to MP 482.21 40.79 miles 110 mph		Segment 2 Porter to Kalamazoo Amtrak MP 241 - MP 143 98.0 miles 110 mph		Segment 3 Kalamazoo to Battle Ck NS MP 143 - MP 121.5 21.5 miles 110 mph		Segment 4 Battle Ck to W Det NS MP 119.6 to MP 3 116.6 miles 110 mph		Segment 5 W. Detroit to Milw. Jct. CR Shared Assets MP 3 to MP 4.2 5.3 miles 60 mph		Segment 6 Milw. Jct. to Pontiac CN MP 4.2 to MP 25.8 21.6 miles 79 mph		Total 303.8 miles	
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Bridges-under																
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-	-	-	-	-	-	-	-	-
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-	-	-	-	-	-	-	-	-
5.3	Two Lane Highway	each	\$ 3,054	-	6	18,324	-	-	5	15,270	-	-	-	-	11	33,594
5.4	Rail	each	\$ 3,054	-	-	-	-	-	-	-	-	-	-	-	-	-
5.5	Minor river	each	\$ 810	-	-	-	-	-	-	-	-	-	-	-	-	-
5.6	Major River	each	\$ 8,098	-	-	-	-	-	-	-	-	-	-	-	-	-
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7	-	-	-	-	-	-	-	-	-	-	-	-	-
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	-	-	-	-	-	-	-	-	-	-	-	-	-
5.73	Single Track on Flyover Structure	per LF	\$ 6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-under Cost				-	-	18,324	-	-	15,270	-	-	-	-	-	33,594	-
Bridges-over																
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-	-	-	-	-	-	-	-	-
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-	-	-	-	-	-	-	-	-
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-	-	-	-	-	-	-	-	-
6.4	Rail	each	\$ 6,110	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-over Cost				-	-	-	-	-	-	-	-	-	-	-	-	-
Crossings																
7.1	Private Closure	each	\$ 83	-	7	581	4	332	11	913	-	-	-	-	22	1,826
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-	-	-	-	-	-	-	-	-
7.3	Four Quadrant Gates	each	\$ 288	-	5	1,440	0	-	4	1,152	-	-	-	9	2,592	
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	-	22	3,300	4	600	21	3,150	-	-	-	47	7,050	
7.4a	Conventional Gates single mainline track	each	\$ 166	-	18	2,988	-	-	31	5,146	-	-	-	49	8,134	
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	12	2,460	-	-	-	-	-	12	2,460	
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	-	0	-	0	-	10	500	-	-	-	10	500	
7.5a	Single Gate with Median Barrier	each	\$ 180	-	22	3,960	4	720	20	3,600	-	-	-	46	8,280	
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	22	330	3	45	20	300	-	-	-	45	675	
7.71	Precast Panels without Rdway Improvements	each	\$ 80	-	-	-	-	-	-	-	-	-	-	-	-	
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-	-	-	-	-	-	-	-	
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	89	1,335	23	345	106	1,590	-	-	-	218	3,270	
Total Crossings Cost				-	-	13,934	4,502	16,351	-	-	-	-	-	-	34,787	-
Segment Totals				-	-	119,801	21,423	141,877	-	-	11,368	-	-	-	294,469	-
Placeholder																
Battle Creek Baron to Gord Improvements				-	-	-	-	15,000	-	-	-	-	-	-	-	15,000
West Detroit to Beaubien Costs (from Lansing to Detroit Study)				-	-	-	-	-	-	-	15,302	-	-	-	-	15,302
Track Improvements				-	-	-	-	-	-	-	5,000	-	-	-	-	5,000
TOTAL				-	-	119,801	36,423	141,877	20,302	11,368	-	-	-	-	329,771	-

NOTES

Installation of PTC system does not include locomotive equipment and dispatch equipment. Assume 26' offset for new mainline track construction for speeds above 79 mph
 Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public crossings at speeds <= 79mph
 Michigan Type Grade Crossing surface used at all crossings
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 228	Michigan City	Full Service - Renovated
MP 192	Niles	Full Service - Renovated
MP 179.5	Dowagiac	Full Service - Renovated
MP 143.5	Kalamazoo	Full Service - Renovated
MP 120.8	Battle Creek	Full Service - Renovated
MP 95.9	Albion	Full Service - Renovated
MP 75	Jackson	Full Service - Renovated
MP 38	Ann Arbor	Full Service - Renovated
MP 8	Dearborn	Full Service - Renovated
MP 5.6	DETROIT	Full Service - Renovated
MP 13.2	Royal Oak	Full Service - Renovated
MP 17.5	Birmingham	Full Service - Renovated
MP 25.8	Pontiac	Terminal - Renovated



TABLE D-2

MWRI PHASE 5

Battle Creek to Port Huron

Revision Date: 3/24/03

			Segment 1 Battle Creek to E. Lansing CN MP 176.6 to MP 223.9 47.3 miles 79 mph		Segment 2 E. Lansing to Flint CN MP 223.9 to MP 280 56.1 miles 79 mph		Segment 3 Flint to Port Huron CN MP 280 to MP 334.2 54.2 miles 79 mph		Total 157.6 miles	
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork										
1.1	HSR on Existing Roadbed	per mile	2	1,986	2	1,986	8	7,944	12	11,916
1.2a	HSR on New Roadbed	per mile		-		-		-		-
1.2b	HSR on New Roadbed & New Embankment	per mile		-		-		-		-
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile		-		-		-		-
1.3	Timber & Surface w/ 33% Tie replacement	per mile	47.3	10,501	56	12,454	54.2	12,032	157.6	34,987
1.4	Timber & Surface w/ 66% Tie Replacement	per mile		-		-		-		-
1.5	Relay Track w/ 136# CWR	per mile		-		-		-		-
1.6	Freight Siding	per mile		-		-		-		-
1.65	Passenger Siding	per mile		-		-		-		-
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile		-		-		-		-
1.72	Fencing, 6 ft Chain Link (both sides)	per mile		-		-		-		-
1.73	Fencing, 10 ft Chain Link (both sides)	per mile		-		-		-		-
1.74	Decorative Fencing (both sides)	per mile		-		-		-		-
Total Track Costs				12,487		14,440		19,976		46,903
Turnouts										
4.1	#24 High Speed Turnout	each		-		-		-		-
4.2	#20 Turnout Timber	each	6	744	8	992	4	496	18	2,232
4.3	#10 Turnout Timber	each		-		-		-		-
4.4	#20 Turnout Concrete	each		-		-		-		-
4.5	#10 Turnout Concrete	each		-		-		-		-
Total Turnouts Cost				744		992		496		2,232
Curves										
9.1	Elevate & Surface Curves	per mile		-		-		-		-
9.2	Curvature Reduction	per mile		-		-		-		-
9.3	Elastic Fasteners	per mile		-		-		-		-
Total Curves Cost				-		-		-		-
Signals										
8.1	Signals for Siding w/ High Speed Turnout	each		-		-		-		-
8.2	Install CTC System (Single Track)	per mile		-		-		-		-
8.21	Install CTC System (Double Track)	per mile		-		-		-		-
8.3	Install PTC System	per mile		-		-		-		-
8.4	Electric Lock for Industry Turnout	each		-		-		-		-
8.5	Signals for Crossover	each	2	1,400	3	2,100		-	5	3,500
8.6	Signals for Turnout	each	2	800	2	800	4	1,600	8	3,200
Total Signals Cost				2,200		2,900		1,600		6,700
Stations / Facilities										
2.1	Full Service - New	each		-		-		-		-
2.2	Full Service - Renovated	each		-	3	1,500	1	500	4	2,000
2.3	Terminal - New	each		-		-		-		-
2.4	Terminal - Renovated	each		-		-	1	1,000	1	1,000
2.6	Layover Facility in Port Huron	lump sum		-		-	1	5,544	1	5,544
2.7	Service & Inspection Facility	lump sum		-		-		-		-
Total Station Cost				-		1,500		7,044		8,544



TABLE D-2
MWRR PHASE 5
Battle Creek to Port Huron
 Revision Date: 3/24/03

			Segment No. From - To Host Carrier	Segment 1 Battle Creek to E. Lansing CN	Segment 2 E. Lansing to Flint CN	Segment 3 Flint to Port Huron CN	Total		
			Mileposts	MP 176.6 to MP 223.9	MP 223.9 to MP 280	MP 280 to MP 334.2	157.6 miles		
			Track Miles	47.3 miles	56.1 miles	54.2 miles			
			Maximum Authorized Speed	79 mph	79 mph	79 mph			
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Bridges-under									
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-	
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-	
5.3	Two Lane Highway	each	\$ 3,054	-	-	-	-	-	
5.4	Rail	each	\$ 3,054	-	-	-	-	-	
5.5	Minor river	each	\$ 810	-	-	-	-	-	
5.6	Major River	each	\$ 8,098	-	-	-	-	-	
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7	-	-	-	-	-	
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	-	-	-	-	-	
5.73	Single Track on Flyover Structure	per LF	\$ 6.0	-	-	-	-	-	
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-	
Total Bridges-under Cost				-	-	-	-	-	
Bridges-over									
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-	
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-	
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-	
6.4	Rail	each	\$ 6,110	-	-	-	-	-	
Total Bridges-over Cost				-	-	-	-	-	
Crossings									
7.1	Private Closure	each	\$ 83	-	-	-	-	-	
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-	
7.3	Four Quadrant Gates	each	\$ 288	-	-	-	-	-	
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	-	-	-	-	-	
7.4a	Conventional Gates single mainline track	each	\$ 166	-	-	-	-	-	
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	-	-	
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	12	600	13	650	28	1,400
7.5a	Single Gate with Median Barrier	each	\$ 180	-	-	-	-	-	
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	-	-	-	-	
7.71	Precast Panels without Rdway Improvements	each	\$ 80	-	-	-	-	-	
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-	
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	-	-	-	-	
Total Crossings Cost				600	650	1,400	2,650		
Segment Totals				16,031	20,482	30,516	67,029		

NOTES

Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public crossings at speeds <= 79mph
 Michigan Type Grade Crossing surface used at all crossings
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 176.6 Battle Creek * Included in Detroit route
 MP 223.9 East Lansing Full Service - Renovated
 MP 253.3 Durand Full Service - Renovated
 MP 280 Flint Full Service - Renovated
 MP 290 Lapeer Full Service - Renovated
 MP 334.2 Port Huron Terminal - Renovated



TABLE D-3
MWRRRI PHASE 5
Kalamazoo to Grand Rapids
 Revision Date: 3/24/03

		Segment No. From - To	Segment 1 Kalamazoo to Grand Rapids NS MP 143.5 to MP 0.3 53.25 miles 79 mph	Segment 2 Grand Rapids to Holland CSXT MP 0.3 to MP 25.3 25.0 miles 79 mph	Total 78.3 miles	
		Host Carrier				
		Mileposts				
		Track Miles				
		Maximum Authorized Speed				
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount
Trackwork						
1.1	HSR on Existing Roadbed	per mile	\$ 993	-	-	-
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	-	-
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	53.25	11,822	25.0
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	-	-
1.5	Relay Track w/ 136# CWR	per mile	\$ 354	-	-	-
1.6	Freight Siding	per mile	\$ 912	1	912	-
1.65	Passenger Siding	per mile	\$ 1,376	-	-	-
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	-	-	-
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	-	-	-
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	-	-	-
1.74	Decorative Fencing (both sides)	per mile	\$ 394	-	-	-
Total Track Costs				12,734	5,550	18,284
Turnouts						
4.1	#24 High Speed Turnout	each	\$ 450	-	-	-
4.2	#20 Turnout Timber	each	\$ 124	-	-	-
4.3	#10 Turnout Timber	each	\$ 69	-	-	-
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-
Total Turnouts Cost				-	-	-
Curves						
9.1	Elevate & Surface Curves	per mile	\$ 58	-	-	-
9.3	Elastic Fasteners	per mile	\$ 82	-	-	-
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -	-	-	-
Total Curves Cost				-	-	-
Signals						
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	-	-
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	-	-
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-
8.3	Install PTC System	per mile	\$ 197	-	-	-
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-
8.5	Signals for Crossover	each	\$ 700	-	-	-
8.6	Signals for Turnout	each	\$ 400	-	-	-
Total Signals Cost				-	-	-
Stations / Facilities						
2.1	Full Service - New	each	\$ 1,000	-	-	-
2.2	Full Service - Renovated	each	\$ 500	1	500	1
2.3	Terminal - New	each	\$ 2,000	-	-	-
2.4	Terminal - Renovated	each	\$ 1,000	-	-	-
2.6	Layover Facility in Holland	lump sum	\$ 5,544	-	1	5,544
2.7	Service & Inspection Facility	lump sum	\$ -	-	-	-
Total Station Cost				500	6,044	6,544



TABLE D-3
MWRRRI PHASE 5
Kalamazoo to Grand Rapids
 Revision Date: 3/24/03

		Segment No.	Segment 1		Segment 2		Total	
		From - To	Kalamazoo to Grand Rapids		Grand Rapids to Holland			
		Host Carrier	NS		CSXT			
		Mileposts	MP 143.5 to MP 0.3		MP 0.3 to MP 25.3			
		Track Miles	53.25 miles		25.0 miles		78.3 miles	
		Maximum Authorized Speed	79 mph		79 mph			
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount
Bridges-under								
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-
5.3	Two Lane Highway	each	\$ 3,054	-	-	-	-	-
5.4	Rail	each	\$ 3,054	-	-	-	-	-
5.5	Minor river	each	\$ 810	-	-	-	-	-
5.6	Major River	each	\$ 8,098	-	-	-	-	-
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7	-	-	-	-	-
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	-	-	-	-	-
5.73	Single Track on Flyover Structure	per LF	\$ 6	-	-	-	-	-
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-
Total Bridges-under Cost				-	-	-	-	-
Bridges-over								
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-
6.4	Rail	each	\$ 6,110	-	-	-	-	-
Total Bridges-over Cost				-	-	-	-	-
Crossings								
7.1	Private Closure	each	\$ 83	-	-	-	-	-
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-
7.3	Four Quadrant Gates	each	\$ 288	-	-	-	-	-
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	-	-	-	-	-
7.4a	Conventional Gates single mainline track	each	\$ 166	-	-	-	-	-
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	-	-
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	32	1,600	15	750	47
7.5a	Single Gate with Median Barrier	each	\$ 180	-	-	-	-	-
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	-	-	-	-
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	-	-	-	-
Total Crossings Cost				1,600	750	2,350		
Segment Totals			14,834	12,344	27,178			

NOTES

Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
 Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
 Estimate average span of underbridge is 40 feet.
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public crossings at speeds <= 79mph
 Michigan Type Grade Crossing surface used at all crossings
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 25.3 Holland Full Service - Renovated
 MP 0.3 Grand Rapids Full Service - Renovated
 MP 143.5 Kalamazoo * Included in Detroit route

TABLE D-4
MWRRRI PHASE 5
Chicago to Cleveland (via Fort Wayne)

Revision Date: 3/24/03

			Chicago Terminal Area Limit																		Total		
			Segment 1 Chicago to Tolleston South-of-the-Lake Corridor Study 26.6 miles		Segment 2 Tolleston to Wanatah CSX MP 442.5 - MP 414.9 27.6 miles 110 mph		Segment 3 Wanatah to Mike CSX & NS SX MP 414.9 - NS MP 146 95.6 miles 110 mph		Segment 4 Mike to New Haven NS MP 146.1 - MP 363.94 6.86 miles 79 mph		Segment 5 New Haven to Liberty Ctr. NS & M&W MP 87.19 - MP 30.25 56.94 miles 110 mph		Segment 6 Liberty Center to Delta I&O MP 82.5 - MP 74.27 8.23 miles 79 mph		Segment 7 Delta to Toledo NS MP 314.4 - 288.5 25.9 miles 110 mph		Segment 8 Toledo to Berea NS MP 288.5 - MP 194 94.5 miles 110 mph		Segment 9 Berea to Cleveland NS MP 194 - MP182 12.0 miles 79 mph		342.3 miles		
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Trackwork																							
1.1	HSR on Existing Roadbed	per mile	\$ 993																				
1.2a	HSR on New Roadbed	per mile	\$ 1,059						3.61	3,823						17	18,003	12	12,708	33	34,534		
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492						2	2,984					23.9	35,659	53	79,076	12	17,904	91	135,623	
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674																				
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222													83	18,426			83	18,426		
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331		27.6	9,136	95.6	31,644	2	662			8.23	2,724	1.9	629					135	44,794	
1.5	Relay Track w/ 136# CWR	per mile	\$ 354																				
1.6	Freight Siding	per mile	\$ 912																				
1.65	Passenger Siding	per mile	\$ 1,376																				
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51		22.08	1,126	76.48	3,900	5.49	280	45.55	2,323	4	204		76	3,856			229	11,689		
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153		4.14	633	14.34	2,194	1.03	157	8.54	1,307			25.9	3,963	14	2,169	12	1,836	80	12,259	
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175																				
1.74	Decorative Fencing (both sides)	per mile	\$ 394		1.38	544	4.78	1,883	0.34	135	2.85	1,122				5	1,862		1	394	15	5,940	
Total Track Costs						18,319	67,141	8,041	18,512	5,680	47,130	150,911	32,842	348,577									
Turnouts																							
4.1	#24 High Speed Turnout	each	\$ 450		2	900	10	4,500			4	1,800			2	900	8	3,600			26	11,700	
4.2	#20 Turnout Timber	each	\$ 124		2	248	8	992	2	248	14	1,736	2	248	2	248	9	1,116	4	496	43	5,332	
4.3	#10 Turnout Timber	each	\$ 69		3	207	23	1,587	9	621	29	2,001									64	4,416	
4.4	#20 Turnout Concrete	each	\$ 249												2	498	9	2,241	14	3,486	25	6,225	
4.5	#10 Turnout Concrete	each	\$ 118												2	236	4	472	4	472	10	1,180	
Total Turnouts Cost						1,355	7,079	869	5,537	248	1,882	7,429	4,454	28,853									
Curves																							
9.1	Elevate & Surface Curves	per mile	\$ 58													3.6	206			4	206		
9.3	Elastic Fasteners	per mile	\$ 82													3.6	291			4	291		
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -														214				214		
Total Curves Cost																711					711		
Signals																							
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268		1	1,268	4	5,072			2	2,536			1	1,268	4	5,072	1	1,268	13	16,484	
8.2	Install CTC System (Single Track)	per mile	\$ 183		27.6	5,051	95.6	17,495	6.86	1,255	56.94	10,420	8.23	1,506	20	3,660	70	12,810			285	52,197	
8.21	Install CTC System (Double Track)	per mile	\$ 300																12	3,600	12	3,600	
8.3	Install PTC System	per mile	\$ 197		27.6	5,437	95.6	18,833	6.86	1,351	56.94	11,217	8.23	1,621	20	3,940	53	10,441			268	52,841	
8.4	Electric Lock for Industry Turnout	each	\$ 103		3	309	23	2,369	9	927	29	2,987			2	206	4	412	4	412	74	7,622	
8.5	Signals for Crossover	each	\$ 700												2	1,400	9	6,300	4	2,800	15	10,500	
8.6	Signals for Turnout	each	\$ 400																10	4,000	10	4,000	
Total Signals Cost						12,065	43,769	3,534	27,160	3,127	10,474	35,035	12,080	147,244									
Stations / Facilities																							
2.1	Full Service - New	each	\$ 1,000																1	1,000	1	1,000	
2.2	Full Service - Renovated	each	\$ 500													2	1,000			2	1,000		
2.3	Terminal - New	each	\$ 2,000				1	2,000												1	2,000		
2.4	Terminal - Renovated	each	\$ 1,000		1	1,000	2	2,000			1	1,000				1	1,000		1	1,000	6	6,000	
2.6	Layover Facility	lump sum	\$ -																				
2.7	Service & Inspection Facility in Cleveland	lump sum	\$ 18,973																	1	18,973	1	18,974
Total Station Cost						1,000	4,000	-	1,000	-	-	-	2,000	20,973	28,974								

TABLE D-4
MWRRI PHASE 5
Chicago to Cleveland (via Fort Wayne)
 Revision Date: 3/24/03

		Chicago Terminal Area Limit																		Total			
		Segment No.	Segment 1		Segment 2		Segment 3		Segment 4		Segment 5		Segment 6		Segment 7		Segment 8		Segment 9		Total		
		From - To	Chicago to Tolleston		Tolleston to Wanatah		Wanatah to Mike		Mike to New Haven		New Haven to Liberty Ctr.		Liberty Center to Delta		Delta to Toledo		Toledo to Berea		Berea to Cleveland		342.3 miles		
		Host Carrier	South-of-the-Lake		CSX		CSX & NS		NS		NS & M&W		I&O		NS		NS		NS				
		Mileposts	Corridor Study		MP 442.5 - MP 414.9		SX MP 414.9 - NS MP 146		MP 146.1 - MP 363.94		MP 87.19 - MP 30.25		MP 82.5 - MP 74.27		MP 314.4 - 288.5		MP 288.5 - MP 194		MP 194 - MP182				
		Track Miles	26.6 miles		27.6 miles		95.6 miles		6.86 miles		56.94 miles		8.23 miles		25.9 miles		94.5 miles		12.0 miles				
		Maximum Authorized Speed	26.6 miles		110 mph		110 mph		79 mph		110 mph		79 mph		110 mph		110 mph		79 mph				
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Bridges-under																							
5.1	Four Lane Urban Expressway	each	\$ 4,835																				
5.2	Four Lane Rural Expressway	each	\$ 4,025																				
5.3	Two Lane Highway	each	\$ 3,054																				
5.4	Rail	each	\$ 3,054												4	12,216	2	6,108					
5.5	Minor river	each	\$ 810										21	17,010			16	12,960					
5.6	Major River	each	\$ 8,098																				
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7																				
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4																				
5.73	Single Track on Flyover Structure	per LF	\$ 6.0						2,100	12,600		1,000	6,000								3,100	18,600	
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0						4,500	13,500		2,000	6,000								6,500	19,500	
Total Bridges-under Cost									26,100	29,010					18,696		19,068					92,874	
Bridges-over																							
6.1	Four Lane Urban Expressway	each	\$ 2,087												1	2,087	2	4,174				3	6,261
6.2	Four Lane Rural Expressway	each	\$ 2,929												1	2,929	2	5,858				3	8,787
6.3	Two Lane Highway	each	\$ 1,903														2	3,806				2	3,806
6.4	Rail	each	\$ 6,110														1	6,110				1	6,110
Total Bridges-over Cost															5,016		19,948					24,964	
Crossings																							
7.1	Private Closure	each	\$ 83			2	166	6	498			6	498	1	83	1	83	5	415			21	1,743
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492			11	5,412	15	7,380	2	984	15	7,380		3	1,476						46	22,632
7.3	Four Quadrant Gates	each	\$ 288			17	4,896	14	4,032	2	576	16	4,608		3	864	17	4,896				69	19,872
7.31	Convert Dual Gates to Quad Gates	each	\$ 150																				
7.4a	Conventional Gates single mainline track	each	\$ 166			15	2,490	76	12,616	5	830	80	13,280	3	498	16	2,656					195	32,370
7.4b	Conventional Gates double mainline track	each	\$ 205															14	2,870			14	2,870
7.41	Convert Flashers Only to Dual Gate	each	\$ 50			5	250	7	350	3	150	11	550				1	50	2	100	29	1,450	
7.5a	Single Gate with Median Barrier	each	\$ 180																				
7.5b	Convert Single Gate to Extended Arm	each	\$ 15																				
7.71	Precast Panels without Rdway Improvements	each	\$ 80															16	1,280			16	1,280
7.72	Precast Panels with Rdway Improvements	each	\$ 150			43	6,450	105	15,750	9	1,350	111	16,650	3	450	22	3,300	16	2,400	2	300	311	46,650
7.8	Michigan Type Grade Crossing Surface	each	\$ 15																				
Total Crossings Cost						19,664		40,626		3,890		42,966		1,031		8,379		11,911		400		128,867	
Segment Totals						52,403		162,615		42,434		124,185		10,087		91,577		247,013		70,749		801,064	
Placeholders																							
	Longitudinal Drainage Improvements	per mile	50			27.6	1,380	95.6	4,780			8.23	412									131	6,572
	Land Acquisition Urban	per mile	327							1.25	409											1	409
	HSR on New Roadbed with Embankment Widening	per mile	1,350									56.37	76,100									56	76,100
	Land Acquisition Rural	per mile	109										1	55								1	55
	Track Connection from M&W to I&O	per mile	1,492											0	298							0	298
	Track Connection from I&O to NS	per LF	3											1,500	4,500							1,500	4,500
	Rehabilitation of Bridge over River at Defiance	LS \$	1,000									1	1,000									1	1,000
	Depress Roadway under RR (Rte 24 east of Napoleon)	LS \$	4,835									1	4,835									1	4,835
	Bridge Rehabilitation	each \$	200			8	1,600	34	6,800	14	2,800			11	2,200							67	13,400
	Culvert	each \$	100									50	5,000		1	100						51	5,100
	Toledo Improvements (Airline Yard, Amtrak Access, NS improvements)	lump sum	40,000												1	40,000						1	40,000
	Maumee River Bridge crossing	lump sum	50,000														1	50,000				1	50,000
	CSX / NS grade separation near Toledo	lump sum	40,000														1	40,000				1	40,000
	Brookpark Improvements (Ford Plant, Rockport Yard)	lump sum	20,000																		1	20,000	
	Cuyahoga River Bridge	lump sum	52,000																		1	52,000	
TOTAL						55,383																	
ADJUSTED TOTAL (ALLOCATE 50% OF TOLLESTON TO WANATAH)						27,691		174,195		45,643		211,119		17,651		131,577		337,013		142,749		1,087,639	

NOTES

Cleveland buildout includes capacity for proposed commuter service
 It is assumed that the embankment fits within NS right-of-way
 Assume 26' offset for new mainline track construction for speeds above 79 mph
 Installation of PTC system does not include locomotive equipment and dispatch equipment.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public crossings at speeds <= 79mph
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS

Gary
 Plymouth
 Warsaw
 Fort Wayne
 Defiance
 Toledo
 Sandusky
 Elyria
 Cleveland Airport
 Cleveland Downtown



TABLE D-5
MWRRRI PHASE 5
Chicago to Cincinnati (via Tolleston)
 Revision Date: 4/17/03

Chicago Terminal Area Limits

		Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed	Segment 1 Chicago to Tolleston South-of-the-Lake Corridor Study 26.6 miles	Segment 2 Tolleston to Wanatah CSX MP 442.5 - MP 414.9 27.6 miles 110 mph	Segment 3 Wanatah to Monon CSX MP 40 to MP 0 40.0 miles 110 mph	Segment 4 Monon to Lafayette CSX MP 88.5 to MP 121 32.5 miles 79 mph	Segment 5 Lafayette to Ames CSX MP 121 - MP 149 28.0 miles 79 mph	Segment 6 Ames to Indianapolis CSX MP 46.3 to MP 1 45.3 miles 79 mph	Segment 7 Indianapolis to Shelbyville CSX MP 124.5 - MP 83 28.5 miles 110 mph	Segment 8 Shelbyville to Cincinnati CIND MP 83 - MP 0.3 83.2 miles 110 mph	Total 311.7 miles											
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount				
Trackwork																						
1.1	HSR on Existing Roadbed	per mile	\$ 993																			
1.2a	HSR on New Roadbed	per mile	\$ 1,059			40.0	42,360										83.2	88,109				
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492																			
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674																			
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222					32.5	7,215	28.0	6,216	45.3	10,057					106	23,488			
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331			27.6	9,136							28.5	9,434			56	18,569			
1.5	Relay Track w/ 136# CWR	per mile	\$ 354					20	7,080									20	7,080			
1.6	Freight Siding	per mile	\$ 912							5	4,560							2	1,824			
1.65	Passenger Siding	per mile	\$ 1,376			5	6,880	5	6,880	12	16,512		4	5,504			5	6,880	31	42,656		
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51			22.08	1,126	32.0	1,632	26.0	1,326	22.4	1,142	36.2	1,848	22.8	1,163	66.6	3,395	228	11,632	
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153			4.14	633	6.0	918	4.9	746	4.2	643	6.8	1,040	4.3	654	12.5	1,909	43	6,543	
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175																			
1.74	Decorative Fencing (both sides)	per mile	\$ 394			1.38	544	2.0	788	1.6	640	1.4	552	2.3	892	1.4	561	4.2	1,639	14	5,616	
Total Track Costs							18,319		52,578		33,519		13,113		19,341		11,812		103,756		252,437	
Turnouts																						
4.1	#24 High Speed Turnout	each	\$ 450			2	900			2	900	2	900	2	900			2	900	10	4,500	
4.2	#20 Turnout Timber	each	\$ 124			2	248	2	248	4	496	6	744					6	744	20	2,480	
4.3	#10 Turnout Timber	each	\$ 69			3	207			1	69	2	138					2	138	8	552	
4.4	#20 Turnout Concrete	each	\$ 249																			
4.5	#10 Turnout Concrete	each	\$ 118																			
Total Turnouts Cost							1,355		248		1,465		1,782		900		-		1,782		7,532	
Curves																						
9.1	Elevate & Surface Curves	per mile	\$ 58											0.5	26		19.2		1,111	20	1,137	
9.3	Elastic Fasteners	per mile	\$ 82											0.5	37		19.2		1,570	20	1,607	
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -												68				2,864		2,932	
Total Curves Cost															131				5,545		5,676	
Signals																						
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268			1	1,268			1	1,268			1	1,268			1	1,268	4	5,072	
8.2	Install CTC System (Single Track)	per mile	\$ 183			27.6	5,051	40	7,320	32.50	5,948	28	5,124	45.3	8,290	28.5	5,216	83.2	15,226	285	52,173	
8.21	Install CTC System (Double Track)	per mile	\$ 300																			
8.3	Install PTC System	per mile	\$ 197			27.6	5,437	40	7,880							20	3,920	75	14,775	163	32,013	
8.4	Electric Lock for Industry Turnout	each	\$ 103			3	309						3	309				8	824	14	1,442	
8.5	Signals for Crossover	each	\$ 700						2	1,400	1	700						1	700	4	2,800	
8.6	Signals for Turnout	each	\$ 400					2	800			4	1,600					4	1,600	10	4,000	
Total Signals Cost							12,065		16,000		8,616		7,424		9,867		9,136		34,393		97,500	
Stations / Facilities																						
2.1	Full Service - New	each	\$ 1,000																			
2.2	Full Service - Renovated	each	\$ 500							1	500	1	500			1	500	1	500	4	2,000	
2.3	Terminal - New	each	\$ 2,000																			
2.4	Terminal - Renovated	each	\$ 1,000			1	1,000												1	1,000	2	2,000
2.6	Layover Facility	lump sum	\$ -																			
2.7	Service & Inspection Facility in Cincinnati	lump sum	\$ 17,681																1	17,681	1	17,682
Total Station Cost							1,000		-		500		500		-		500		19,181		21,682	



TABLE D-5
MWRRRI PHASE 5
Chicago to Cincinnati (via Tolleston)
 Revision Date: 4/17/03

Chicago Terminal Area Limits

		Segment No. From - To	Host Carrier	Mileposts	Track Miles	Maximum Authorized Speed	Segment 1 Chicago to Tolleston South-of-the-Lake Corridor Study 26.6 miles	Segment 2 Tolleston to Wanatah CSX MP 442.5 - MP 414.9 27.6 miles 110 mph	Segment 3 Wanatah to Monon CSX MP 40 to MP 0 40.0 miles 110 mph	Segment 4 Monon to Lafayette CSX MP 88.5 to MP 121 32.5 miles 79 mph	Segment 5 Lafayette to Ames CSX MP 121 - MP 149 28.0 miles 79 mph	Segment 6 Ames to Indianapolis CSX MP 46.3 to MP 1 45.3 miles 79 mph	Segment 7 Indianapolis to Shelbyville CSX MP 124.5 - MP 83 28.5 miles 110 mph	Segment 8 Shelbyville to Cincinnati CIND MP 83 - MP 0.3 83.2 miles 110 mph	Total 311.7 miles						
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount					
Bridges-under																					
5.1	Four Lane Urban Expressway	each	\$ 4,835																		
5.2	Four Lane Rural Expressway	each	\$ 4,025																		
5.3	Two Lane Highway	each	\$ 3,054																		
5.4	Rail	each	\$ 3,054					3	9,162							3	9,162				
5.5	Minor river	each	\$ 810					11	8,910							11	8,910				
5.6	Major River	each	\$ 8,098																		
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7										600	2,806	2910	13,609	3,510	16,415			
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4																		
5.73	Single Track on Flyover Structure	per LF	\$ 6.0																		
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0																		
Total Bridges-under Cost									18,072				2,806		13,609		34,487				
Bridges-over																					
6.1	Four Lane Urban Expressway	each	\$ 2,087																		
6.2	Four Lane Rural Expressway	each	\$ 2,929																		
6.3	Two Lane Highway	each	\$ 1,903																		
6.4	Rail	each	\$ 6,110																		
Total Bridges-over Cost																					
Crossings																					
7.1	Private Closure	each	\$ 83			2	166			3	249	5	415	5	415	3	249	9	747	27	2,241
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492			11	5,412												11	5,412	
7.3	Four Quadrant Gates	each	\$ 288			17	4,896	12	3,456									2	576	31	8,928
7.31	Convert Dual Gates to Quad Gates	each	\$ 150											7	1,050	20	3,000		27	4,050	
7.4a	Conventional Gates single mainline track	each	\$ 166			15	2,490			35	5,810	27	4,482	33	5,478	8	1,328	26	4,316	144	23,904
7.4b	Conventional Gates double mainline track	each	\$ 205																		
7.41	Convert Flashers Only to Dual Gate	each	\$ 50			5	250			3	150	5	250	10	500	1	50	1	50	25	1,250
7.5a	Single Gate with Median Barrier	each	\$ 180					32	5,760											32	5,760
7.5b	Convert Single Gate to Extended Arm	each	\$ 15												24	360	60	900		84	1,260
7.71	Precast Panels without Rdway Improvements	each	\$ 80							38	3,040	32	2,560	43	3,440	40	3,200	109	8,720	262	20,960
7.72	Precast Panels with Rdway Improvements	each	\$ 150			43	6,450	44	6,600											87	13,050
7.8	Michigan Type Grade Crossing Surface	each	\$ 15																		
Total Crossings Cost							19,664	15,816	9,249	7,707	9,833	6,237	18,309		86,815						
Segment Totals							52,403	102,714	53,349	30,526	39,941	30,622	196,575		506,129						
Placeholders																					
	Longitudinal Drainage Improvements	per mile	\$ 50			27.6	1,380							1	50				29	1,430	
	Bridge Rehabilitation	each	\$ 200			8	1,600												8	1,600	
	IU Interlocking	lump sum	\$ 10,000											1	10,000				1	10,000	
	Upgrade Bridges	each	\$ 500													32	16,000		32	16,000	
ADJUSTED TOTAL (ALLOCATE 50% OF TOLLESTON TO WANATAH)							27,691	102,714	53,349	30,526	39,941	40,672	212,575		507,467						

NOTES

- Installation of PTC system does not include locomotive equipment and dispatch equipment.
- Cost Estimate does not include utility relocation.
- Corridor access with freight railroads to be negotiated; costs not included
- Station costs are MWRRS allocation amounts
- Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
- Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
- Estimate average span of underbridge is 40 feet.
- Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
- Four Quadrant Gates all public crossings at speeds > 79mph
- Conventional Gates all public crossings at speeds <= 79mph
- Precast Panels with Rdway Improvements installed where track embankment is replaced
- Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

- MP 120.1 Lafayette Full Service - Renovated
- MP 147.25 Crawfordsville Full Service - Renovated
- MP 124.5 Indianapolis Full Service - Renovated
- MP 83 Shelbyville Full Service - Renovated
- MP 0.3 Cincinnati Terminal - Renovated



TABLE D-6
MWRI PHASE 5
Chicago to Carbondale
 Revision Date: 3/30/03

				Chicago Terminal Area Included in SOLR Study		Segment 1 Chicago to Grand Crossing NS MP 0 - MP 513.4 9.7 miles		Segment 2 Grand Crossing to Kankakee CN(ICRR) MP 10 - MP 55.3 45.3 miles 90 mph		Segment 3 Kankakee to Champaign CN(ICRR) MP 55.3 - MP 127.8 72.5 miles 90 mph		Segment 4 Champaign to Effingham CN(ICRR) MP 127.8 - MP 199.2 71.4 miles 90 mph		Segment 5 Effingham to Carbondale CN(ICRR) MP 199.2 - MP 309 109.8 miles 90 mph		Total 299.0 miles	
Item	Unit	YR 2002 Unit Cost (1000s)			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Trackwork																	
1.1	HSR on Existing Roadbed	per mile	\$ 993			-											
1.2a	HSR on New Roadbed	per mile	\$ 1,059			-											
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492			-											
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674			-											
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222		45.3	10,057		83.1	18,448		71.4	15,851		130.9	29,058	331	73,413
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331			-											
1.5	Relay Track w/ 136# CWR	per mile	\$ 354			-											
1.6	Freight Siding	per mile	\$ 912			-											
1.65	Passenger Siding	per mile	\$ 1,376		2	2,752		11	15,136							13	17,888
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51		36	1,848		58	2,958		57	2,913		88	4,480	239	12,199
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153		7	1,040		11	1,664		11	1,639		16	2,520	45	6,862
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175			-											
1.74	Decorative Fencing (both sides)	per mile	\$ 394		2	892		4	1,428		4	1,407		5	2,163	15	5,890
Total Track Costs						16,589	39,634	21,809	38,220			116,253					
Turnouts																	
4.1	#24 High Speed Turnout	each	\$ 450			-		2	900							2	900
4.2	#20 Turnout Timber	each	\$ 124		6	744		6	744							12	1,488
4.3	#10 Turnout Timber	each	\$ 69			-											
4.4	#20 Turnout Concrete	each	\$ 249			-											
4.5	#10 Turnout Concrete	each	\$ 118			-											
Total Turnouts Cost						744	1,644	-	-			2,388					
Curves																	
9.1	Elevate & Surface Curves	per mile	\$ 58		0.3	19		0.4	23		1.1	63		3.7	213	5	318
9.3	Elastic Fasteners	per mile	\$ 82		0.3	27		0.4	33		1.1	89		3.7	301	5	450
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum							51			34			221		307
Total Curves Cost						46	107	187	735			1,075					
Signals																	
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268			-		1	1,268							1	1,268
8.2	Install CTC System (Single Track)	per mile	\$ 183			-											
8.21	Install CTC System (Double Track)	per mile	\$ 300			-											
8.3	Install PTC System	per mile	\$ 197		45.30	8,924		72.50	14,283		71.40	14,066		109.80	21,631	299	58,903
8.4	Electric Lock for Industry Turnout	each	\$ 103			-											
8.5	Signals for Crossover	each	\$ 700		2	1,400		2	1,400							4	2,800
8.6	Signals for Turnout	each	\$ 400		2	800		2	800							4	1,600
Total Signals Cost						11,124	17,751	14,066	21,631			64,571					
Stations / Facilities																	
2.1	Full Service - New	each	\$ 1,000			-								1	1,000	1	1,000
2.2	Full Service - Renovated	each	\$ 500		1	500		2	1,000		3	1,500		1	500	7	3,500
2.3	Terminal - New	each	\$ 2,000			-											
2.4	Terminal - Renovated	each	\$ 1,000			-								1	1,000	1	1,000
2.6	Layover Facility in Carbondale	lump sum	\$ 5,544			-								1	5,544	1	5,544
2.7	Service & Inspection Facility	lump sum	\$ -			-											
Total Station Cost						500	1,000	1,500	8,044			11,044					



TABLE D-6
MWRRRI PHASE 5
Chicago to Carbondale
 Revision Date: 3/30/03

				Chicago Terminal Area Included in SOLR Study		Segment 1 Chicago to Grand Crossing NS MP 0 - MP 513.4 9.7 miles		Segment 2 Grand Crossing to Kankakee CN(ICRR) MP 10 - MP 55.3 45.3 miles 90 mph		Segment 3 Kankakee to Champaign CN(ICRR) MP 55.3 - MP 127.8 72.5 miles 90 mph		Segment 4 Champaign to Effingham CN(ICRR) MP 127.8 - MP 199.2 71.4 miles 90 mph		Segment 5 Effingham to Carbondale CN(ICRR) MP 199.2 - MP 309 109.8 miles 90 mph		Total 299.0 miles	
Item	Unit	YR 2002 Unit Cost (1000s)			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Bridges-under																	
5.1	Four Lane Urban Expressway	each	\$ 4,835			-											
5.2	Four Lane Rural Expressway	each	\$ 4,025			-											
5.3	Two Lane Highway	each	\$ 3,054			-											
5.4	Rail	each	\$ 3,054			-											
5.5	Minor river	each	\$ 810			-											
5.6	Major River	each	\$ 8,098			-											
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7			-											
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4			-											
5.73	Single Track on Flyover Structure	per LF	\$ 6.0			-											
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0			-											
Total Bridges-under Cost						-	-	-	-	-	-	-	-	-	-	-	-
Bridges-over																	
6.1	Four Lane Urban Expressway	each	\$ 2,087			-											
6.2	Four Lane Rural Expressway	each	\$ 2,929			-											
6.3	Two Lane Highway	each	\$ 1,903			-											
6.4	Rail	each	\$ 6,110			-											
Total Bridges-over Cost						-	-	-	-	-	-	-	-	-	-	-	-
Crossings																	
7.1	Private Closure	each	\$ 83		2	166	9	747	6	498	12	996	29	2,407			
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492			-		-		-		-		-			
7.3	Four Quadrant Gates	each	\$ 288			-		-		-		-		-			
7.31	Convert Dual Gates to Quad Gates	each	\$ 150			-		-		-		-		-			
7.4a	Conventional Gates single mainline track	each	\$ 166		3	498	27	4,482	20	3,320	40	6,640	90	14,940			
7.4b	Conventional Gates double mainline track	each	\$ 205			-		-		-		-		-			
7.41	Convert Flashers Only to Dual Gate	each	\$ 50			-		-		-		-		-			
7.5a	Single Gate with Median Barrier	each	\$ 180			-		-		-		-		-			
7.5b	Convert Single Gate to Extended Arm	each	\$ 15			-		-		-		-		-			
7.71	Precast Panels without Rdway Improvements	each	\$ 80		3	240	27	2,160	20	1,600	40	3,200	90	7,200			
7.72	Precast Panels with Rdway Improvements	each	\$ 150			-		-		-		-		-			
7.8	Michigan Type Grade Crossing Surface	each	\$ 15			-		-		-		-		-			
Total Crossings Cost						904	7,389	5,418	10,836	24,547							
Segment Totals						29,907	67,525	42,980	79,466	219,878							

NOTES

Installation of PTC system does not include locomotive equipment and dispatch equipment.
 Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
 Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
 Estimate average span of underbridge is 40 feet.
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public and private crossings at speeds <= 79mph
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 23.5	Homewood	Full Service - Renovated
MP 55.9	Kankakee	Full Service - Renovated
MP 113.9	Rantoul	Full Service - Renovated
MP 127.8	Champaign-Urbana	Full Service - Renovated
MP 172.4	Mattoon	Full Service - Renovated
MP 199.2	Effingham	Full Service - Renovated
MP 252.4	Centralia	Full Service - New
MP 287.8	Du Quoin	Full Service - Renovated
MP 308.1	Carbondale	Terminal - Renovated



TABLE D-7
MWRRRI PHASE 5
Chicago to St. Louis
 Revision Date: 3/24/03

		Chicago Terminal Area		From IDOT Estimates				From IDOT Estimates				Total			
Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed		Segment 1 Chicago to Joliet CN MP 0 - MP 36.7 36.7 miles 79 mph		Segment 2 Joliet to Mazonia UP MP 36.7 - MP 62.6 36.9 miles 110 mph		Segment 3 Mazonia to Springfield UP MP 62.6 - MP 180.78 118.18 miles 110 mph		Segment 4 Springfield UP MP 180.78 - MP 189.4 8.62 miles 45 mph		Segment 5 Springfield to Q Tower UP MP 189.4 - MP 281 89.19 miles 110 mph		Segment 6 Q Tower to St. Louis UP MP 281 - MP 283.4 2.4 miles 45 mph		292.0 miles	
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Trackwork															
1.1	HSR on Existing Roadbed	per mile	\$ 993	-	-	-	-	-	-	-	-	-	-	-	
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	-	-	-	-	-	-	-	-	-	-	
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-	-	-	-	-	-	-	-	-	
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-	-	-	-	-	-	-	-	-	
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	-	36.9	8,192	-	8.6	1,914	-	2.4	533	48	10,638	
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	-	-	-	-	-	-	-	-	-	-	
1.5	Relay Track w/ 136# CWR	per mile	\$ 354	-	-	-	-	-	-	-	-	-	-	-	
1.6	Freight Siding	per mile	\$ 912	-	-	-	-	-	-	-	-	-	-	-	
1.65	Passenger Siding	per mile	\$ 1,376	-	-	-	-	-	-	-	-	-	-	-	
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	-	29.52	1,506	-	-	-	-	1.92	98	31	1,603	
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	-	5.54	847	-	2	306	-	0.36	55	8	1,208	
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	-	-	-	-	-	-	-	-	-	21	344	
1.74	Decorative Fencing (both sides)	per mile	\$ 394	-	1.85	727	-	1	394	-	0.12	47	1	394	
Total Track Costs				-	-	11,271	-	-	2,614	-	-	754	-	14,187	
Turnouts															
4.1	#24 High Speed Turnout	each	\$ 450	-	-	-	-	-	-	-	-	-	-	-	
4.2	#20 Turnout Timber	each	\$ 124	-	4	496	-	-	-	-	-	-	4	496	
4.3	#10 Turnout Timber	each	\$ 69	-	-	-	-	-	-	-	-	-	-	-	
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-	-	-	-	-	-	-	-	-	
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-	-	-	-	-	-	-	-	-	
Total Turnouts Cost				-	-	496	-	-	-	-	-	-	-	496	
Curves															
9.1	Elevate & Surface Curves	per mile	\$ 58	-	1.7	99	-	-	-	-	-	-	2	99	
9.3	Elastic Fasteners	per mile	\$ 82	-	1.7	139	-	-	-	-	-	-	2	139	
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum		-	-	198	-	-	-	-	-	-	-	198	
Total Curves Cost				-	-	436	-	-	-	-	-	-	-	436	
Signals															
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	-	-	-	-	-	-	-	-	-	-	
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	-	-	-	-	-	-	-	-	-	-	
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-	-	-	-	-	-	-	-	-	
8.3	Install PTC System	per mile	\$ 197	-	36.9	7,269	-	-	-	-	-	-	37	7,269	
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-	-	-	-	-	-	-	-	-	
8.5	Signals for Crossover	each	\$ 700	-	-	-	-	-	-	-	-	-	-	-	
8.6	Signals for Turnout	each	\$ 400	-	-	-	-	-	-	-	-	-	-	-	
Total Signals Cost				-	-	7,269	-	-	-	-	-	-	-	7,269	
Stations / Facilities															
2.1	Full Service - New	each	\$ 1,000	-	-	-	-	-	-	-	-	-	-	-	
2.2	Full Service - Renovated	each	\$ 500	-	4	2,000	-	1	500	-	2	1,000	7	3,500	
2.3	Terminal - New	each	\$ 2,000	-	-	-	-	-	-	-	-	-	-	-	
2.4	Terminal - Renovated	each	\$ 1,000	-	-	-	-	-	-	-	1	1,000	1	1,000	
2.6	Layover Facility	lump sum	\$ -	-	-	-	-	-	-	-	-	-	-	-	
2.7	Service & Inspection Facility in St. Louis	lump sum	\$ 21,405	-	-	-	-	-	-	-	1	21,405	1	21,406	
Total Station Cost				-	-	2,000	-	500	-	-	23,405	-	-	25,906	

TABLE D-7
MWRRRI PHASE 5
Chicago to St. Louis
 Revision Date: 3/24/03

				Chicago Terminal Area		From IDOT Estimates				From IDOT Estimates				Total		
		Segment No.	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6								
		From - To	Chicago to Joliet	Joliet to Mazonia	Mazonia to Springfield	Springfield	Springfield to Q Tower	Q Tower to St. Louis								
		Host Carrier	CN	UP	UP	UP	UP	UP								
		Mileposts	MP 0 - MP 36.7	MP 36.7 - MP 62.6	MP 62.6 - MP 180.78	MP 180.78 - MP 189.4	MP 189.4 - MP 281	MP 281 - MP 283.4								
		Track Miles	36.7 miles	36.9 miles	118.18 miles	8.62 miles	89.19 miles	2.4 miles								
		Maximum Authorized Speed	79 mph	110 mph	110 mph	45 mph	110 mph	45 mph								
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Bridges-under																
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-	-	-	-	-	-	-	-	-
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-	-	-	-	-	-	-	-	-
5.3	Two Lane Highway	each	\$ 3,054	-	-	-	-	-	-	-	-	-	-	-	-	-
5.4	Rail	each	\$ 3,054	-	-	-	-	-	-	-	-	-	-	-	-	-
5.5	Minor river	each	\$ 810	-	-	-	-	-	-	-	-	-	-	-	-	-
5.6	Major River	each	\$ 8,098	-	-	-	-	-	-	-	-	-	-	-	-	-
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7	-	-	-	-	-	-	-	-	-	-	-	-	-
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	-	180	1,684	-	-	-	-	-	-	-	180	1,684	
5.73	Single Track on Flyover Structure	per LF	\$ 6.0	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-under Cost				-	-	1,684	-	-	-	-	-	-	-	-	1,684	-
Bridges-over																
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-	-	-	-	-	-	-	-	-
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-	-	-	-	-	-	-	-	-
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-	-	-	-	-	-	-	-	-
6.4	Rail	each	\$ 6,110	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-over Cost				-	-	-	-	-	-	-	-	-	-	-	-	-
Crossings																
7.1	Private Closure	each	\$ 83	-	2	166	-	-	-	-	-	-	-	2	166	
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-	-	-	-	-	-	-	-	
7.3	Four Quadrant Gates	each	\$ 288	-	15	4,320	-	-	-	-	-	-	-	15	4,320	
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	-	6	900	-	-	-	-	-	-	-	6	900	
7.4a	Conventional Gates single mainline track	each	\$ 166	-	4	664	-	1	166	-	-	-	-	5	830	
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	-	-	-	-	-	-	-	-	-	
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	-	-	-	-	9	450	-	-	-	-	9	450	
7.5a	Single Gate with Median Barrier	each	\$ 180	-	-	-	-	-	-	-	-	-	-	-	-	
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	-	-	-	-	-	-	-	-	-	-	-	
7.71	Precast Panels without Rdway Improvements	each	\$ 80	-	19	1,520	-	1	80	-	-	-	-	20	1,600	
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	-	-	-	-	-	-	-	-	-	
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	-	-	-	-	-	-	-	-	-	-	-	
Total Crossings Cost				-	-	7,570	-	696	-	-	-	-	-	-	8,266	
Segment Totals						30,726		3,810		24,159		58,244				
Placeholders																
IDOT Estimate		lump sum					49,864			63,915					113,780	
Additional Grade Crossings not included in IDOT Estimate		lump sum					16,000								16,000	
Add 31 % Soft Costs to IDOT Estimate		lump sum					20,418			19,814					40,232	
St. Louis Area Track & Signal Improvements		lump sum	15,000										1	15,000	15,000	
TOTAL						30,726	86,282	3,810	83,729	39,159		243,256				

NOTES

- Installation of PTC system does not include locomotive equipment and dispatch equipment.
- Cost Estimate does not include utility relocation.
- Corridor access with freight railroads to be negotiated; costs not included
- Station costs are MWRRS allocation amounts
- Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
- Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
- Estimate average span of underbridge is 40 feet.
- Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
- Four Quadrant Gates all public crossings at speeds > 79mph
- Conventional Gates all public and private crossings at speeds <= 79mph
- Precast Panels with Rdway Improvements installed where track embankment is replaced
- Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP	Station	Improvement
MP 37.5	Joliet	In Chicago Terminal Area
MP 73.6	Dwight	Full Service - Renovated
MP 92.15	Pontiac	Full Service - Renovated
MP 124.1	Bloomington-Normal	Full Service - Renovated
MP 156.4	Lincoln	Full Service - Renovated
MP 185.15	Springfield	Full Service - Renovated
MP 223.8	Carlville	Full Service - Renovated
MP 256.8	Alton	Full Service - Renovated
MP 283.4	St. Louis	Terminal - Renovated



TABLE D-8

MWRRRI PHASE 5

St. Louis to Kansas City

Revision Date: 3/24/03

			Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed	Segment 1 St. Louis to Jefferson City UP MP 0.59 to MP 125.5 124.9 miles 90 mph	Segment 2 Jefferson City to Kansas City UP MP 125.5 to MP 283 157.5 miles 90 mph	Total 282.4 miles		
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork								
1.1	HSR on Existing Roadbed	per mile		-		-	-	-
1.2a	HSR on New Roadbed	per mile		-		-	-	-
1.2b	HSR on New Roadbed & New Embankment	per mile		-		-	-	-
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile		-		-	-	-
1.3	Timber & Surface w/ 33% Tie replacement	per mile		-		-	-	-
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	230.9	76,431	157.5	52,133	388	128,564
1.5	Relay Track w/ 136# CWR	per mile		-		-	-	-
1.6	Freight Siding	per mile		-		-	-	-
1.65	Passenger Siding	per mile		-		-	-	-
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile		-		-	-	-
1.72	Fencing, 6 ft Chain Link (both sides)	per mile		-		-	-	-
1.73	Fencing, 10 ft Chain Link (both sides)	per mile		-		-	-	-
1.74	Decorative Fencing (both sides)	per mile		-		-	-	-
Total Track Costs				76,431		52,133		128,564
Turnouts								
4.1	#24 High Speed Turnout	each	10	4,500	12	5,400	22	9,900
4.2	#20 Turnout Timber	each		-		-	-	-
4.3	#10 Turnout Timber	each		-		-	-	-
4.4	#20 Turnout Concrete	each		-		-	-	-
4.5	#10 Turnout Concrete	each		-		-	-	-
Total Turnouts Cost				4,500		5,400		9,900
Curves								
9.1	Elevate & Surface Curves	per mile	32.73	1,898	52.11	3,022	85	4,921
9.3	Elastic Fasteners	per mile	32.73	2,684	52.11	4,273	85	6,957
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum		10,180		10,188	-	20,368
Total Curves Cost				14,762		17,483		32,245
Signals								
8.1	Signals for Siding w/ High Speed Turnout	each		-		-	-	-
8.2	Install CTC System (Single Track)	per mile		-		-	-	-
8.21	Install CTC System (Double Track)	per mile		-		-	-	-
8.3	Install PTC System	per mile	124.91	24,607	157.50	31,028	282	55,635
8.4	Electric Lock for Industry Turnout	each		-		-	-	-
8.5	Signals for Crossover	each		-		-	-	-
8.6	Signals for Turnout	each	10	4,000	12	4,800	22	8,800
Total Signals Cost				28,607		35,828		64,435
Stations / Facilities								
2.1	Full Service - New	each		-		-	-	-
2.2	Full Service - Renovated	each	4	2,000	4	2,000	8	4,000
2.3	Terminal - New	each		-		-	-	-
2.4	Terminal - Renovated	each		-	1	1,000	1	1,000
2.6	Layover Facility in Kansas City	lump sum		-	1	5,544	1	5,544
2.7	Service & Inspection Facility	lump sum		-		-	-	-
Total Station Cost				2,000		8,544		10,544



TABLE D-8
MWRRRI PHASE 5
St. Louis to Kansas City
 Revision Date: 3/24/03

			Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed	Segment 1 St. Louis to Jefferson City UP MP 0.59 to MP 125.5 124.9 miles 90 mph	Segment 2 Jefferson City to Kansas City UP MP 125.5 to MP 283 157.5 miles 90 mph	Total 282.4 miles		
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount
Bridges-under								
5.1	Four Lane Urban Expressway	each		\$ 4,835		-		-
5.2	Four Lane Rural Expressway	each		\$ 4,025		-		-
5.3	Two Lane Highway	each		\$ 3,054		-		-
5.4	Rail	each		\$ 3,054		-		-
5.5	Minor river	each		\$ 810		-		-
5.6	Major River	each		\$ 8,098		-		-
5.71	Convert open deck bridge to ballast deck (single track)	per LF		\$ 4.7		-		-
5.72	Convert open deck bridge to ballast deck (double track)	per LF		\$ 9.4		-		-
5.73	Single Track on Flyover Structure	per LF		\$ 6.0		-		-
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF		\$ 3.0		-		-
Total Bridges-under Cost				-		-		-
Bridges-over								
6.1	Four Lane Urban Expressway	each		\$ 2,087		-		-
6.2	Four Lane Rural Expressway	each		\$ 2,929		-		-
6.3	Two Lane Highway	each		\$ 1,903		-		-
6.4	Rail	each		\$ 6,110		-		-
Total Bridges-over Cost				-		-		-
Crossings								
7.1	Private Closure	each	10	\$ 83	18	1,494	28	2,324
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each		\$ 492		-		-
7.3	Four Quadrant Gates	each	11	\$ 288	44	12,672	55	15,840
7.31	Convert Dual Gates to Quad Gates	each	19	\$ 150	67	10,050	86	12,900
7.4a	Conventional Gates single mainline track	each	27	\$ 166	39	6,474	66	10,956
7.4b	Conventional Gates double mainline track	each		\$ 205		-		-
7.41	Convert Flashers Only to Dual Gate	each	1	\$ 50		-	1	50
7.5a	Single Gate with Median Barrier	each		\$ 180		-		-
7.5b	Convert Single Gate to Extended Arm	each		\$ 15		-		-
7.71	Precast Panels without Rdway Improvements	each	57	\$ 80	150	12,000	207	16,560
7.72	Precast Panels with Rdway Improvements	each		\$ 150		-		-
7.8	Michigan Type Grade Crossing Surface	each		\$ 15		-		-
Total Crossings Cost				15,940		42,690		58,630
Segment Totals				142,240		162,077		304,318
Placeholders								
KC Access Cost		lump sum		10,000		10,000		10,000
TOTAL				142,240		172,077		314,318

NOTES

Costs for capacity mitigation not included.
 Installation of PTC system does not include locomotive equipment and dispatch equipment.
 Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
 Estimate average span of underbridge is 40 feet.
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public and private crossings at speeds <= 79mph
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 0.59	St. Louis	included in St. Louis route
MP 13.21	Kirkwood	Full Service - Renovated
MP 51.70	Washington	Full Service - Renovated
MP 80.92	Hermann	Full Service - Renovated
MP 125.5	Jefferson City	Full Service - Renovated
MP 188.9	Sedalia	Full Service - Renovated
MP 218.4	Warrensburg	Full Service - Renovated
MP 258.03	Lee's Summit	Full Service - Renovated
MP 271.2	Independence	Full Service - Renovated
MP 283	Kansas City	Terminal - Renovated



TABLE D-9
MWRRI PHASE 5
Chicago to Quincy
 Revision Date: 3/30/03

		Chicago Terminal Area										
		Segment No.	Segment 1	Segment 2	Segment 3	Segment 4	Total					
		From - To	Chicago to Aurora	Aurora to Wyanet	Wyanet to Galesburg	Galesburg to Quincy	218.4 miles					
		Host Carrier	BNSF	BNSF	BNSF	BNSF						
		Mileposts	MP 0 - MP 40.2	MP 40.2 - MP 110.7	MP 110.7 - MP 162.4	MP 162.4 - MP 258.56						
		Track Miles	40.2 miles	70.5 miles	51.7 miles	96.2 miles						
		Maximum Authorized Speed	79 mph	90 mph	90 mph	90 mph						
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork												
1.1	HSR on Existing Roadbed	per mile	\$ 993									
1.2a	HSR on New Roadbed	per mile	\$ 1,059									
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492				3	4,476			3	4,476
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674									
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222		141	31,302	103.4	22,955	96	21,356	341	75,613
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331									
1.5	Relay Track w/ 136# CWR	per mile	\$ 354									
1.6	Freight Siding	per mile	\$ 912		2	1,824			3	2,736	5	4,560
1.65	Passenger Siding	per mile	\$ 1,376		10	13,760			8	11,008	18	24,768
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51		66	3,366			93	4,743	159	8,109
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153		30	4,590			40	6,120	70	10,710
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175									
1.74	Decorative Fencing (both sides)	per mile	\$ 394		15	5,910			15	5,910	30	11,820
Total Track Costs						60,752		27,431		51,873		140,056
Turnouts												
4.1	#24 High Speed Turnout	each	\$ 450		2	900	2	900			4	1,800
4.2	#20 Turnout Timber	each	\$ 124		10	1,240			6	744	16	1,984
4.3	#10 Turnout Timber	each	\$ 69		6	414			6	414	12	828
4.4	#20 Turnout Concrete	each	\$ 249									
4.5	#10 Turnout Concrete	each	\$ 118									
Total Turnouts Cost						2,554		900		1,158		4,612
Curves												
9.1	Elevate & Surface Curves	per mile	\$ 58		1.6	93	6.52	378	16.64	965	25	1,436
9.3	Elastic Fasteners	per mile	\$ 82		1.6	131	6.52	535	16.64	1,365	25	2,030
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum				224		238		1,098		1,560
Total Curves Cost						448		1,151		3,427		5,027
Signals												
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268		1	1,268	1	1,268	2	2,536	4	5,072
8.2	Install CTC System (Single Track)	per mile	\$ 183									
8.21	Install CTC System (Double Track)	per mile	\$ 300									
8.3	Install PTC System	per mile	\$ 197		70.5	13,889	51.7	10,185	96.16	18,944	218	43,017
8.4	Electric Lock for Industry Turnout	each	\$ 103									
8.5	Signals for Crossover	each	\$ 700		5	3,500			2	1,400	7	4,900
8.6	Signals for Turnout	each	\$ 400		2	800			2	800	4	1,600
Total Signals Cost						19,457		11,453		23,680		54,589
Stations / Facilities												
2.1	Full Service - New	each	\$ 1,000									
2.2	Full Service - Renovated	each	\$ 500		3	1,500	2	1,000	2	1,000	7	3,500
2.3	Terminal - New	each	\$ 2,000									
2.4	Terminal - Renovated	each	\$ 1,000									
2.6	Layover Facility in Quincy	lump sum	\$ 5,544						1	5,544	1	5,544
2.7	Service & Inspection Facility	lump sum	\$ -									
Total Station Cost						1,500		1,000		6,544		9,044



TABLE D-9
MWRRI PHASE 5
Chicago to Quincy
 Revision Date: 3/30/03

		Chicago Terminal Area											
		Segment No.	Segment 1		Segment 2		Segment 3		Segment 4		Total		
		From - To	Chicago to Aurora		Aurora to Wyanet		Wyanet to Galesburg		Galesburg to Quincy		218.4 miles		
		Host Carrier	BNSF		BNSF		BNSF		BNSF				
		Mileposts	MP 0 - MP 40.2		MP 40.2 - MP 110.7		MP 110.7 - MP 162.4		MP 162.4 - MP 258.56				
		Track Miles	40.2 miles		70.5 miles		51.7 miles		96.2 miles				
		Maximum Authorized Speed	79 mph		90 mph		90 mph		90 mph				
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Bridges-under													
5.1	Four Lane Urban Expressway	each	\$ 4,835										
5.2	Four Lane Rural Expressway	each	\$ 4,025										
5.3	Two Lane Highway	each	\$ 3,054										
5.4	Rail	each	\$ 3,054										
5.5	Minor river	each	\$ 810										
5.6	Major River	each	\$ 8,098										
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7						570	2,666	570	2,666	
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4		330	3,087	270	2,525			600	5,612	
5.73	Single Track on Flyover Structure	per LF	\$ 6.0										
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0										
Total Bridges-under Cost							3,087	2,525		2,666		8,278	
Bridges-over													
6.1	Four Lane Urban Expressway	each	\$ 2,087										
6.2	Four Lane Rural Expressway	each	\$ 2,929										
6.3	Two Lane Highway	each	\$ 1,903										
6.4	Rail	each	\$ 6,110										
Total Bridges-over Cost							-	-		-		-	
Crossings													
7.1	Private Closure	each	\$ 83		10	830	8	664	4	332	22	1,826	
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492										
7.3	Four Quadrant Gates	each	\$ 288										
7.31	Convert Dual Gates to Quad Gates	each	\$ 150										
7.4a	Conventional Gates single mainline track	each	\$ 166		0		0		10	1,660	10	1,660	
7.4b	Conventional Gates double mainline track	each	\$ 205		41.00	8,405	31.00	6,355	82.00	16,810	154	31,570	
7.41	Convert Flashers Only to Dual Gate	each	\$ 50						11	550	11	550	
7.5a	Single Gate with Median Barrier	each	\$ 180										
7.5b	Convert Single Gate to Extended Arm	each	\$ 15										
7.71	Precast Panels without Rdway Improvements	each	\$ 80										
7.72	Precast Panels with Rdway Improvements	each	\$ 150										
7.8	Michigan Type Grade Crossing Surface	each	\$ 15		0		0		10	150	10	150	
Total Crossings Cost							9,235	7,019		19,502		35,756	
Segment Totals						97,032	51,479	108,850		257,362			

NOTES

- Installation of PTC system does not include locomotive equipment and dispatch equipment.
- Cost Estimate does not include utility relocation.
- Corridor access with freight railroads to be negotiated; costs not included
- Station costs are MWRRS allocation amounts
- Siding improvements incorporate recommendations from TEMS Ideal Day Analysis Report (Dated March 8, 2002)
- Assume 75% of underbridges need to be upgraded where speeds are above 79 mph
- Estimate average span of underbridge is 40 feet.
- Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
- Four Quadrant Gates all public crossings at speeds > 79mph
- Conventional Gates all public and private crossings at speeds <= 79mph
- Precast Panels with Rdway Improvements installed where track embankment is replaced
- Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 13.7	La Grange	Full Service - Renovated
MP 28.4	Naperville	Full Service - Renovated
MP 51.5	Plano	Full Service - Renovated
MP 82.6	Mendota	Full Service - Renovated
MP 104.35	Princeton	Full Service - Renovated
MP 131.1	Kewanee	Full Service - Renovated
MP 162.4	Galesburg	Full Service - Renovated
MP 202.3	Macomb	Full Service - Renovated
MP 258.56	Quincy	Full Service - Renovated



TABLE D-10
MWRRRI PHASE 5
Wyant to Omaha
 Revision Date: 3/24/03

Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed			Segment 1 Wyant to Quad Cities BNSF MP 129.5 - MP 180.5 51.0 miles 79 mph		Segment 2 Quad Cities to Iowa City IAIS MP 180.5 - MP 236.75 56.3 miles 79 mph		Segment 3 Iowa City to Des Moines IAIS MP 236.75 - MP 357.7 121.0 miles 79 mph		Segment 4 Des Moines to Omaha IAIS MP 357.7 - MP 505 147.3 miles 79 mph		Total 375.5 miles	
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork												
1.1	HSR on Existing Roadbed	per mile		\$ 993		-		-		-		-
1.2a	HSR on New Roadbed	per mile		\$ 1,059		-		-		-		-
1.2b	HSR on New Roadbed & New Embankment	per mile		\$ 1,492		-		-		-		-
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile		\$ 2,674		-		-		-		-
1.3	Timber & Surface w/ 33% Tie replacement	per mile		\$ 222		-		-		-		-
1.4	Timber & Surface w/ 66% Tie Replacement	per mile		\$ 331	56.3	18,619	121.0	40,034	147.3	48,756	325	107,410
1.5	Relay Track w/ 136# CWR	per mile		\$ 354	17	6,018	20	7,080	17	6,018	54	19,116
1.6	Freight Siding	per mile		\$ 912	1	912	1	912	1	912	3	2,736
1.65	Passenger Siding	per mile		\$ 1,376	4	5,504	10	13,760	5	6,880	19	26,144
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile		\$ 51		-		-		-		-
1.72	Fencing, 6 ft Chain Link (both sides)	per mile		\$ 153		-		-		-		-
1.73	Fencing, 10 ft Chain Link (both sides)	per mile		\$ 175		-		-		-		-
1.74	Decorative Fencing (both sides)	per mile		\$ 394		-		-		-		-
Total Track Costs						31,053	61,786	62,566	155,406			
Turnouts												
4.1	#24 High Speed Turnout	each		\$ 450	2	900	4	1,800	2	900	8	3,600
4.2	#20 Turnout Timber	each		\$ 124	2	248		-		-	2	248
4.3	#10 Turnout Timber	each		\$ 69		-	2	138	6	414	8	552
4.4	#20 Turnout Concrete	each		\$ 249		-		-		-		-
4.5	#10 Turnout Concrete	each		\$ 118		-		-		-		-
Total Turnouts Cost						1,148	1,938	1,314	4,400			
Curves												
9.1	Elevate & Surface Curves	per mile		\$ 58		-		-		-		-
9.3	Elastic Fasteners	per mile		\$ 82		-		-		-		-
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum		\$ -		-		-		-		-
Total Curves Cost						-	-	-	-			
Signals												
8.1	Signals for Siding w/ High Speed Turnout	each		\$ 1,268		-		-		-		-
8.2	Install CTC System (Single Track)	per mile		\$ 183	56.3	10,294	121.0	22,134	147.3	26,956	325	59,384
8.21	Install CTC System (Double Track)	per mile		\$ 300		-		-		-		-
8.3	Install PTC System	per mile		\$ 197		-		-		-		-
8.4	Electric Lock for Industry Turnout	each		\$ 103	2	206	4	412	2	206	8	824
8.5	Signals for Crossover	each		\$ 700		-		-		-		-
8.6	Signals for Turnout	each		\$ 400	4	1,600	6	2,400	6	2,400	16	6,400
Total Signals Cost						12,100	24,946	29,562	66,608			
Stations / Facilities												
2.1	Full Service - New	each		\$ 1,000		-		-		-		-
2.2	Full Service - Renovated	each		\$ 500	2	1,000	2	1,000	1	500	5	2,500
2.3	Terminal - New	each		\$ 2,000		-		-		-		-
2.4	Terminal - Renovated	each		\$ 1,000		-		-	1	1,000	1	1,000
2.6	Layover Facility in Quad Cities	lump sum		\$ 6,536	1	6,536		-		-	1	6,536
2.7	Service & Inspection Facility in Omaha	lump sum		\$ 17,069		-		-	1	17,069	1	17,069
Total Station Cost						7,536	1,000	18,569	27,105			



TABLE D-10
MWRRRI PHASE 5
Wyaret to Omaha
 Revision Date: 3/24/03

		Segment No. From - To		Segment 1 Wyaret to Quad Cities		Segment 2 Quad Cities to Iowa City		Segment 3 Iowa City to Des Moines		Segment 4 Des Moines to Omaha		Total	
		Host Carrier		BNSF		IAIS		IAIS		IAIS		375.5 miles	
		Mileposts		MP 129.5 - MP 180.5		MP 180.5 - MP 236.75		MP 236.75 - MP 357.7		MP 357.7 - MP 505			
		Track Miles		51.0 miles		56.3 miles		121.0 miles		147.3 miles			
		Maximum Authorized Speed		79 mph		79 mph		79 mph		79 mph			
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Bridges-under													
5.1	Four Lane Urban Expressway	each		\$ 4,835									
5.2	Four Lane Rural Expressway	each		\$ 4,025									
5.3	Two Lane Highway	each		\$ 3,054									
5.4	Rail	each		\$ 3,054									
5.5	Minor river	each		\$ 810									
5.6	Major River	each		\$ 8,098									
5.71	Convert open deck bridge to ballast deck (single track)	per LF		\$ 4.7									
5.72	Convert open deck bridge to ballast deck (double track)	per LF		\$ 9.4									
5.73	Single Track on Flyover Structure	per LF		\$ 6.0									
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF		\$ 3.0									
Total Bridges-under Cost													
Bridges-over													
6.1	Four Lane Urban Expressway	each		\$ 2,087									
6.2	Four Lane Rural Expressway	each		\$ 2,929									
6.3	Two Lane Highway	each		\$ 1,903									
6.4	Rail	each		\$ 6,110									
Total Bridges-over Cost													
Crossings													
7.1	Private Closure	each		\$ 83									
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each		\$ 492									
7.3	Four Quadrant Gates	each		\$ 288									
7.31	Convert Dual Gates to Quad Gates	each		\$ 150									
7.4a	Conventional Gates single mainline track	each		\$ 166	20	3,320	63	10,458	66	10,956	149	24,734	
7.4b	Conventional Gates double mainline track	each		\$ 205									
7.41	Convert Flashers Only to Dual Gate	each		\$ 50	19	950	34	1,700	26	1,300	79	3,950	
7.5a	Single Gate with Median Barrier	each		\$ 180									
7.5b	Convert Single Gate to Extended Arm	each		\$ 15									
7.71	Precast Panels without Rdway Improvements	each		\$ 80									
7.72	Precast Panels with Rdway Improvements	each		\$ 150									
7.8	Michigan Type Grade Crossing Surface	each		\$ 15	20	300	63	945	66	990	149	2,235	
Total Crossings Cost						4,570		13,103		13,246		30,919	
Segment Totals					0	56,407		102,773		125,257		284,437	
Placeholders													
BNSF/IAIS Connection Cost (From Design Nine Report)		lump sum				3,990							3,990
IAIS Rehab Cost (From Design Nine Report)		lump sum				28,957							28,957
Add Soft Costs (31%)		lump sum				10,213							10,213
Bridge Upgrade Costs (From 3B Estimate)		lump sum					3,673		7,131			11,806	22,610
Track & Signal Improvements at Omaha		lump sum								1	10,000		10,000
TOTAL					43,159	60,080		109,904		147,064		360,207	

NOTES

- Installation of PTC system does not include locomotive equipment and dispatch equipment.
- Cost Estimate does not include utility relocation.
- Corridor access with freight railroads to be negotiated; costs not included
- Station costs are MWRRS allocation amounts
- Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
- Four Quadrant Gates all public crossings at speeds > 79mph
- Conventional Gates all public and private crossings at speeds <= 79mph
- Precast Panels with Rdway Improvements installed where track embankment is replaced
- Precast Panels without Rdway Improvements installed where track embankment is not replaced

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

- MP 181.2 Rock Island Full Service - New
- MP 182.8 Davenport Full Service - Renovated
- MP 236.75 Iowa City Full Service - New
- MP 322.5 Newton Full Service - New
- MP 357.7 Des Moines Full Service - New
- MP 439.95 Atlantic Full Service - New
- MP 503.1 Omaha Terminal - Renovated

Grade Crossing Data:

TYPE	segment 1	segment 2	segment 3	segment 4
FI & G	33	20	28	8
FI	9	19	34	26
SO	24	20	63	66
TOTAL	66	59	125	100



TABLE D-11
MWRRRI PHASE 5

Chicago to St. Paul

Revision Date: 3/24/03

Chicago Terminal Area Limit

<-----From Chicago to Milwaukee Study 1995----->

From Milwaukee-Madison

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1 Chicago to Rondout CP MP 0 - MP 37.5 37.5 miles 79 mph		Segment 2 Rondout to IL/WI Line CP MP 37.5 - MP 47 9.5 miles 110 mph		Segment 3 IL/WI Line to Milwaukee CP MP 47 - MP 85 38.7 miles 110 mph		Segment 4 Milwaukee to Madison CP MP 85 - MP 169.2 84.2 miles 110 mph		Segment 5 Madison to Portage CP MP 29.7 to MP 0 29.7 miles 110 mph		Segment 6 Portage to LaCrosse CP MP 179.9 - MP 288 111.5 miles 110 mph		Segment 7 LaCrosse to St. Paul CP MP 288 - MP 410.2 122.2 miles 110 mph		Total 433.30 miles		
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Trackwork																			
1.1	HSR on Existing Roadbed	per mile	\$ 993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	-	-	-	-	-	21.1	22,345	22	23,298	32	33,888	75	79,531		
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-	-	-	-	8.6	12,831	-	-	17.5	26,110	26.1	38,941		
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	-	-	-	-	-	-	-	-	111.5	24,753	122.2	27,128	234	51,881		
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.5	Relay Track w/ 136# CWR	per mile	\$ 354	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.6	Freight Siding	per mile	\$ 912	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.65	Passenger Siding	per mile	\$ 1,376	-	-	-	-	-	-	-	-	20	27,520	30	41,280	50	68,800		
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	-	-	-	-	-	-	23.8	1,212	89.2	4,549	97.8	4,986	211	10,747		
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	-	-	-	-	-	-	4	682	17	2,559	18	2,804	40	6,045		
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1.74	Decorative Fencing (both sides)	per mile	\$ 394	-	-	-	-	-	-	1	585	6	2,197	6	2,407	13	5,189		
Total Track Costs				-	-	-	-	-	-	37,655	84,876	138,604	261,134						
Turnouts																			
4.1	#24 High Speed Turnout	each	\$ 450	-	-	-	-	-	-	-	-	4	1,800	6	2,700	10	4,500		
4.2	#20 Turnout Timber	each	\$ 124	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.3	#10 Turnout Timber	each	\$ 69	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total Turnouts Cost				-	-	-	-	-	-	-	-	1,800	2,700	4,500					
Curves																			
9.1	Elevate & Surface Curves	per mile	\$ 58	-	-	-	-	-	-	1.3	73	13.1	759	26.7	1,549	41	2,381		
9.3	Elastic Fasteners	per mile	\$ 82	-	-	-	-	-	-	1.3	103	13.1	1,073	26.7	2,190	41	3,366		
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -	-	-	-	-	-	-	-	85	2,051	8,839	-	10,975	-	-		
Total Curves Cost				-	-	-	-	-	-	260	3,884	12,578	16,722						
Signals																			
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	-	-	-	-	-	-	-	2	2,536	3	3,804	5	6,340		
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-	-	-	-	29.7	8,910	22	6,600	32	9,600	84	25,110		
8.3	Install PTC System	per mile	\$ 197	-	-	-	-	-	-	24	4,728	100	19,700	100	19,700	224	44,128		
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.5	Signals for Crossover	each	\$ 700	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
8.6	Signals for Turnout	each	\$ 400	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Total Signals Cost				-	-	-	-	-	-	13,638	28,836	33,104	75,578						
Stations / Facilities																			
2.1	Full Service - New	each	\$ 1,000	-	-	-	-	-	-	-	-	1	1,000	-	-	1	1,000		
2.2	Full Service - Renovated	each	\$ 500	-	-	-	-	-	-	6	3,000	1	500	2	1,000	11	5,500		
2.3	Terminal - New	each	\$ 2,000	-	-	-	-	-	-	-	-	-	-	1	2,000	1	2,000		
2.4	Terminal - Renovated	each	\$ 1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2.6	Layover Facility in Milwaukee	lump sum	\$ 6,536	-	-	-	-	-	-	1	6,536	-	-	-	-	1	6,536		
2.7	Service & Inspection Facility in Madison & Minneapolis	lump sum	\$ 17,681	-	-	-	-	-	-	1	17,681	-	-	1	17,681	2	35,362		
Total Station Cost				-	-	-	-	-	-	27,217	500	2,000	20,681	50,398					



TABLE D-11
MWRRRI PHASE 5

Chicago to St. Paul

Revision Date: 3/24/03

Chicago Terminal Area Limit

			Chicago Terminal Area Limit				From Chicago to Milwaukee Study 1995				From Milwaukee-Madison									
Segment No.	From - To	Host Carrier	Segment 1		Segment 2		Segment 3		Segment 4		Segment 5		Segment 6		Segment 7		Total			
Mileposts	Track Miles	Maximum Authorized Speed	Chicago to Rondout CP		Rondout to IL/WI Line CP		IL/WI Line to Milwaukee CP		Milwaukee to Madison CP		Madison to Portage CP		Portage to LaCrosse CP		LaCrosse to St. Paul CP		433.30 miles			
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount		
Bridges-under																				
5.1	Four Lane Urban Expressway	each	\$	4,835																
5.2	Four Lane Rural Expressway	each	\$	4,025																
5.3	Two Lane Highway	each	\$	3,054																
5.4	Rail	each	\$	3,054																
5.5	Minor river	each	\$	810																
5.6	Major River	each	\$	8,098																
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$	4.7									300	1,403	420	1,964	720	3,367		
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$	9.4									510	4,770	660	6,173	1,170	10,943		
5.73	Single Track on Flyover Structure	per LF	\$	6																
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$	3																
Total Bridges-under Cost													3,054	6,173	8,137		17,365			
Bridges-over																				
6.1	Four Lane Urban Expressway	each	\$	2,087																
6.2	Four Lane Rural Expressway	each	\$	2,929																
6.3	Two Lane Highway	each	\$	1,903																
6.4	Rail	each	\$	6,110																
Total Bridges-over Cost																				
Crossings																				
7.1	Private Closure	each	\$	83									6	498	12	996	12	996		
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$	492																
7.3	Four Quadrant Gates	each	\$	288									37	10,656	70	20,160	37	10,656		
7.31	Convert Dual Gates to Quad Gates	each	\$	150									1	150	3	450	13	1,950		
7.4a	Conventional Gates single mainline track	each	\$	166									15	2,490	33	5,478	33	5,478		
7.4b	Conventional Gates double mainline track	each	\$	205																
7.41	Convert Flashers Only to Dual Gate	each	\$	50											3	150	17	850		
7.5a	Single Gate with Median Barrier	each	\$	180																
7.5b	Convert Single Gate to Extended Arm	each	\$	15																
7.71	Precast Panels without Rdway Improvements	each	\$	80									40	3,200				40		
7.72	Precast Panels with Rdway Improvements	each	\$	150									13	1,950	109	16,350	100	15,000		
7.8	Michigan Type Grade Crossing Surface	each	\$	15																
Total Crossings Cost													18,944	43,584	34,930		97,458			
Segment Totals									27,217	74,051	171,153	250,735	523,156							
Placeholders																				
From Chicago to Milwaukee Study					14,235	285,819													300,053	
From Milwaukee to Madison Study							226,582													226,582
TOTAL					14,235	285,819	253,799	74,051	171,153	250,735	523,156									

NOTES

- Installation of PTC system does not include locomotive equipment and dispatch equipment.
- Cost Estimate does not include utility relocation.
- Corridor access with freight railroads to be negotiated; costs not included
- Station costs are MWRRS allocation amounts
- Siding improvements incorporate recommendations from TEMS Capacity Analysis Report (Dated September, 2001) for the Milwaukee to Madison Passenger Rail Corridor Study
- Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
- Four Quadrant Gates all public crossings at speeds > 79mph

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

- MP 17.2 Glenview included in the Chicago to Milwaukee Study Cost Estimates
- MP 61.5 Sturtevant included in the Chicago to Milwaukee Study Cost Estimates
- MP 78.5 GMIA included in the Chicago to Milwaukee Study Cost Estimates
- MP 85.93 Milwaukee Full Service - Renovated
- MP 100.00 Brookfield Full Service - Renovated
- MP 117.5 Oconomowoc Full Service - Renovated
- MP 131.2 Watertown Full Service - Renovated



TABLE D-11
MWRRRI PHASE 5

Chicago to St. Paul

Revision Date: 3/24/03

Chicago Terminal Area Limit

<-----From Chicago to Milwaukee Study 1995----->

From Milwaukee-Madison

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1		Segment 2		Segment 3		Segment 4		Segment 5		Segment 6		Segment 7		Total		
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity
Segment No.																			
From - To																			
Host Carrier																			
Mileposts																			
Track Miles																			
Maximum Authorized Speed																			

Conventional Gates all public crossings at speeds <= 79mph
Precast Panels with Rdway Improvements installed where track embankment is replaced
Precast Panels without Rdway Improvements installed where track embankment is not replaced

MP 5.5 Madison Airport Full Service - Renovated
MP 30.0 New Madison Full Service - Renovated
MP 178.5 Portage Full Service - Renovated
MP 195.0 Wisconsin Dells Full Service - Renovated
MP 240.0 Tomah Full Service - Renovated
MP 281.5 La Crosse Full Service - Renovated
MP 308.5 Winona Full Service - Renovated
MP 370.6 Red Wing Full Service - Renovated
MP 410.2 St. Paul - Minneapolis Terminal - Renovated

Segments 2 & 3: Chicago to Milwaukee Costs from 1995 Chicago to Milwaukee Study	Segment 2	Segment 3
Total Cost (in 1993 Dollars, includes 7% Engineering and 15% Contingencies)	\$ 11,170,583	\$ 140,327,100
Inflate to 2002 costs	\$ 14,234,674	\$ 178,818,824
Additional Capacity Improvements KK Jct to Muskego Yd on UP		\$ 107,000,000
TOTAL	\$ 14,234,674	\$ 285,818,824

Segment 4: From Milwaukee-Madison Study			
Segment	Begin MP	End MP	Cost
Milwaukee Station to Dayton St.	85	132.1	\$ 92,655,000
Dayton St. to Waterloo Malting	132.1	145.2	\$ 50,517,780
Waterloo Malting to Lien Rd.	145.2	161.9	\$ 50,952,810
Lien Rd. to E. Johnson St.	161.9	166	\$ 12,074,648
E. Johnson St. to Airport	166	169.2	\$ 8,508,025
Total			\$ 214,708,263
(in 2000 Dollars, includes 7% engr, 5% proj mgmt, 4% construction contingencies)			
Inflate to 2002 costs			\$ 226,581,630

(includes double track from MP 104.2 to MP 131)



TABLE D-12
MWRRI PHASE 5
Milwaukee to Green Bay
 Revision Date: 3/24/03

<-----From Milwaukee to Green Bay Alternatives Analysis Report November 2001----->

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1 Milwaukee to Grand Ave. CP MP 85.8 - MP 88.3 2.5 miles		Segment 2 Grand Ave. to West Bend CP MP 88.3 to MP 119.6 37.2 miles 110 mph		Segment 3 West Bend to Fond du Lac CN(WC) MP 119.6 to MP 155.0 28.0 miles 110.0 miles		Segment 4 Fond Du Lac to Appleton CN(WC) MP 160.4 - MP 215 33.0 miles 110 mph		Segment 5 Appleton to Green Bay CN(WC) MP 213 - MP 243 28.0 miles 79 mph		Total 128.7 miles	
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Trackwork														
1.10	HSR on Existing Roadbed	per mile	\$ 993	-	-	-	-	-	-	-	-	-	-	-
1.2a	HSR on New Roadbed	per mile	\$ 1,059	-	32	33,888	-	-	-	-	6	6,354	38	40,242
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492	-	-	-	18	26,856	33	49,236	-	-	51	76,092
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674	-	-	-	10	26,740	-	-	-	-	10	26,740
1.30	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222	-	-	-	-	-	-	-	22	4,884	22	4,884
1.40	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331	-	-	-	-	-	-	-	-	-	-	-
1.50	Relay Track w/ 136# CWR	per mile	\$ 354	-	-	-	-	-	-	-	-	-	-	-
1.60	Freight Siding	per mile	\$ 912	-	-	-	-	-	10	9,120	-	-	10	9,120
1.65	Passenger Siding	per mile	\$ 1,376	-	-	-	-	-	-	-	-	-	-	-
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51	-	20	1,020	18	918	30	1,530	-	-	68	3,468
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153	-	10	1,530	8	1,224	3	459	-	-	21	3,213
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175	-	-	-	-	-	-	-	-	-	-	-
1.74	Decorative Fencing (both sides)	per mile	\$ 394	-	2	788	2	788	1	394	-	-	5	1,970
Total Track Costs				-	-	37,226	56,526	60,739	11,238	-	-	-	165,729	
Turnouts and Crossovers														
4.1	#24 High Speed Turnout	each	\$ 450	-	-	-	2	900	2	900	-	-	4	1,800
4.2	#20 Turnout Timber	each	\$ 124	-	-	-	-	-	-	-	-	-	-	-
4.3	#10 Turnout Timber	each	\$ 69	-	-	-	-	-	-	-	-	-	-	-
4.4	#20 Turnout Concrete	each	\$ 249	-	-	-	-	-	-	-	-	-	-	-
4.5	#10 Turnout Concrete	each	\$ 118	-	-	-	-	-	-	-	-	-	-	-
Total Turnouts Cost				-	-	-	900	900	-	-	-	-	1,800	
Curves														
9.1	Elevate & Surface Curves	per mile	\$ 58	-	3	174	3	174	-	-	-	-	6	348
9.3	Elastic Fasteners	per mile	\$ 82	-	3	246	3	246	-	-	-	-	6	492
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	\$ -	-	-	314	-	314	-	-	-	-	-	629
Total Curves Cost				-	-	734	734	-	-	-	-	-	1,469	
Signals														
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268	-	-	-	2	2,536	-	-	-	-	2	2,536
8.2	Install CTC System (Single Track)	per mile	\$ 183	-	32	5,856	28	5,124	-	-	-	-	60	10,980
8.21	Install CTC System (Double Track)	per mile	\$ 300	-	-	-	-	-	-	-	-	-	-	-
8.3	Install PTC System	per mile	\$ 197	-	24	4,728	26	5,122	33	6,501	-	-	83	16,351
8.4	Electric Lock for Industry Turnout	each	\$ 103	-	-	-	-	-	-	-	-	-	-	-
8.5	Signals for Crossover	each	\$ 700	-	-	-	-	-	-	-	-	-	-	-
8.6	Signals for Turnout	each	\$ 400	-	-	-	-	-	-	-	-	-	-	-
Total Signals Cost				-	-	10,584	12,782	6,501	-	-	-	-	29,867	



TABLE D-12
MWRRI PHASE 5
Milwaukee to Green Bay
 Revision Date: 3/24/03

<-----From Milwaukee to Green Bay Alternatives Analysis Report November 2001----->

			Segment No. From - To Host Carrier Mileposts Track Miles Maximum Authorized Speed	Segment 1 Milwaukee to Grand Ave. CP MP 85.8 - MP 88.3 2.5 miles	Segment 2 Grand Ave. to West Bend CP MP 88.3 to MP 119.6 37.2 miles 110 mph	Segment 3 West Bend to Fond du Lac CN(WC) MP 119.6 to MP 155.0 28.0 miles 110.0 miles	Segment 4 Fond Du Lac to Appleton CN(WC) MP 160.4 - MP 215 33.0 miles 110 mph	Segment 5 Appleton to Green Bay CN(WC) MP 213 - MP 243 28.0 miles 79 mph	Total 128.7 miles				
Item	Unit	YR 2002 Unit Cost (1000s)	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	
Stations / Facilities													
2.1	Full Service - New	each	\$ 1,000	-	2	2,000	-	3	3,000	1	1,000	6	6,000
2.2	Full Service - Renovated	each	\$ 500	-	-	-	-	1	500	-	-	1	500
2.3	Terminal - New	each	\$ 2,000	-	-	-	-	-	-	-	-	-	-
2.4	Terminal - Renovated	each	\$ 1,000	-	-	-	-	-	-	-	-	-	-
2.6	Layover Facility in Green Bay	lump sum	\$ 6,536	-	-	-	-	-	-	1	6,536	1	6,536
2.7	Service & Inspection Facility	lump sum	\$ -	-	-	-	-	-	-	-	-	-	-
Total Station Cost				-	-	2,000	-	3,500	7,536	-	-	13,036	



TABLE D-12
MWRRI PHASE 5
Milwaukee to Green Bay
 Revision Date: 3/24/03

<-----From Milwaukee to Green Bay Alternatives Analysis Report November 2001----->

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1 Milwaukee to Grand Ave. CP MP 85.8 - MP 88.3 2.5 miles		Segment 2 Grand Ave. to West Bend CP MP 88.3 to MP 119.6 37.2 miles 110 mph		Segment 3 West Bend to Fond du Lac CN(WC) MP 119.6 to MP 155.0 28.0 miles 110.0 miles		Segment 4 Fond Du Lac to Appleton CN(WC) MP 160.4 - MP 215 33.0 miles 110 mph		Segment 5 Appleton to Green Bay CN(WC) MP 213 - MP 243 28.0 miles 79 mph		Total 128.7 miles	
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Bridges-under														
5.1	Four Lane Urban Expressway	each	\$ 4,835	-	-	-	-	-	-	-	-	-	-	-
5.2	Four Lane Rural Expressway	each	\$ 4,025	-	-	-	-	-	-	-	-	-	-	-
5.3	Two Lane Highway	each	\$ 3,054	-	7	21,378	1	3,054	-	-	2	6,108	10	30,540
5.4	Rail	each	\$ 3,054	-	1	3,054	-	-	-	-	-	-	1	3,054
5.5	Minor river	each	\$ 810	-	5	4,050	4	3,240	-	-	-	-	9	7,290
5.6	Major River	each	\$ 8,098	-	-	-	-	-	1	8,098	-	-	1	8,098
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 5	-	-	-	-	-	-	-	-	-	-	-
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4	-	-	-	-	-	-	-	-	-	-	-
5.73	Single Track on Flyover Structure	per LF	\$ 6.0	-	-	-	-	-	-	-	-	-	-	-
5.8	Single Track on Approach Embankment w/ Retaining Wall	per LF	\$ 3.0	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-under Cost				-	-	28,482	6,294	8,098	6,108	-	-	-	48,982	
Bridges-over														
6.1	Four Lane Urban Expressway	each	\$ 2,087	-	-	-	-	-	-	-	-	-	-	-
6.2	Four Lane Rural Expressway	each	\$ 2,929	-	-	-	-	-	2	5,858	-	-	2	5,858
6.3	Two Lane Highway	each	\$ 1,903	-	-	-	-	-	2	3,806	-	-	2	3,806
6.4	Rail	each	\$ 6,110	-	-	-	-	-	-	-	-	-	-	-
Total Bridges-over Cost				-	-	-	-	9,664	-	-	-	-	9,664	
Crossings														
7.1	Private Closure	each	\$ 83	-	12	996	26	2,158	8	664	-	-	46	3,818
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492	-	-	-	-	-	-	-	-	-	-	-
7.3	Four Quadrant Gates	each	\$ 288	-	8	2,304	7	2,016	19	5,472	-	-	34	9,792
7.31	Convert Dual Gates to Quad Gates	each	\$ 150	-	-	-	-	-	-	-	-	-	-	-
7.4a	Conventional Gates single mainline track	each	\$ 166	-	-	-	-	-	-	-	-	-	-	-
7.4b	Conventional Gates double mainline track	each	\$ 205	-	-	-	-	-	-	-	-	-	-	-
7.41	Convert Flashers Only to Dual Gate	each	\$ 50	-	-	-	-	-	-	-	-	-	-	-
7.5a	Single Gate with Median Barrier	each	\$ 180	-	20	3,600	28	5,040	26	4,680	-	-	74	13,320
7.5b	Convert Single Gate to Extended Arm	each	\$ 15	-	-	-	-	-	-	-	-	-	-	-
7.71	Precast Panels without Rdway Improvements	each	\$ 80	-	28	2,240	-	-	-	-	-	-	28	2,240
7.72	Precast Panels with Rdway Improvements	each	\$ 150	-	-	-	35	5,250	45	6,750	-	-	80	12,000
7.8	Michigan Type Grade Crossing Surface	each	\$ 15	-	-	-	-	-	-	-	-	-	-	-
Total Crossings Cost				-	9,140	14,464	17,566	-	-	-	-	-	41,170	
Segment Totals					88,166	91,700	106,968	24,882					311,717	

NOTES

Milwaukee to Grand Ave. costs are included in the Chicago to St. Paul Route
 Some train meets are at stations
 Installation of PTC system does not include locomotive equipment and dispatch equipment.

ASSUMED STATION LOCATIONS AND IMPROVEMENTS:

MP 100	Granville	New Full Service Station
MP 117.5	West Bend	New Full Service Station
MP 156.5	Fond du Lac	Full Service Renovated



TABLE D-12
MWRRI PHASE 5
Milwaukee to Green Bay
 Revision Date: 3/24/03

<-----From Milwaukee to Green Bay Alternatives Analysis Report November 2001----->

Item	Unit	YR 2002 Unit Cost (1000s)	Segment 1		Segment 2		Segment 3		Segment 4		Segment 5		Total	
			Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount

Cost Estimate does not include utility relocation.
 Corridor access with freight railroads to be negotiated; costs not included
 Station costs are MWRRS allocation amounts
 Close 25% of all private crossings where speeds are above 79 mph; remainder are Conventional Gate
 Four Quadrant Gates all public crossings at speeds > 79mph
 Conventional Gates all public crossings at speeds <= 79mph
 Precast Panels with Rdway Improvements installed where track embankment is replaced
 Precast Panels without Rdway Improvements installed where track embankment is not replaced

MP 173.5	Oshkosh	New Full Service Station
MP 186.5	Neenah	New Full Service Station
MP 213	Appleton	New Full Service Station
MP 243	Green Bay	New Full Service Station

**TABLE E****MWRI PHASE 5****Summary of Unit Costs**

Revision Date: 6/3/02

Item No	Description	Unit	2002 Unit Cost (in 1000s)
Trackwork			
1.1	HSR on Existing Roadbed	per mile	\$ 993
1.2a	HSR on New Roadbed	per mile	\$ 1,059
1.2b	HSR on New Roadbed & New Embankment	per mile	\$ 1,492
1.2c	HSR on New Roadbed & New Embankment (Double Track)	per mile	\$ 2,674
1.3	Timber & Surface w/ 33% Tie replacement	per mile	\$ 222
1.4	Timber & Surface w/ 66% Tie Replacement	per mile	\$ 331
1.5	Relay Track w/ 136# CWR	per mile	\$ 354
1.6	Freight Siding	per mile	\$ 912
1.65	Passenger Siding	per mile	\$ 1,376
1.71	Fencing, 4 ft Woven Wire (both sides)	per mile	\$ 51
1.72	Fencing, 6 ft Chain Link (both sides)	per mile	\$ 153
1.73	Fencing, 10 ft Chain Link (both sides)	per mile	\$ 175
1.74	Decorative Fencing (both sides)	per mile	\$ 394
1.8	Drainage Improvements	per mile	\$ 66
1.9a	Land Acquisition Urban	per mile	\$ 327
1.9b	Land Acquisition Rural	per mile	\$ 109
Curves			
9.1	Elevate & Surface Curves	per mile	\$ 58
9.2	Curvature Reduction	per mile	\$ 393
9.3	Elastic Fasteners	per mile	\$ 82
9.5	Realign Track for Curves (See Table G6 for Costs)	lump sum	
Signals			
8.1	Signals for Siding w/ High Speed Turnout	each	\$ 1,268
8.2	Install CTC System (Single Track)	per mile	\$ 183
8.21	Install CTC System (Double Track)	per mile	\$ 300
8.3	Install PTC System	per mile	\$ 197
8.4	Electric Lock for Industry Turnout	each	\$ 103
8.5	Signals for Crossover	each	\$ 700
8.6	Signals for Turnout	each	\$ 400
Stations / Facilities			
2.1	Full Service - New	each	\$ 1,000
2.2	Full Service - Renovated	each	\$ 500
2.3	Terminal - New	each	\$ 2,000
2.4	Terminal - Renovated	each	\$ 1,000
2.5a	Maintenance (110 MPH technology)	each	\$ 10,000
2.5b	Maintenance (150 MPH technology)	each	\$ 86,000
2.5c	Maintenance (185 MPH technology)	each	\$ 162,000
2.5	Maintenance Facility	each	\$ 45,351
2.6	Layover Facility	lump sum	
2.7	Service & Inspection Facility	lump sum	
Turnouts			
4.1	#24 High Speed Turnout	each	\$ 450
4.2	#20 Turnout Timber	each	\$ 124
4.3	#10 Turnout Timber	each	\$ 69
4.4	#20 Turnout Concrete	each	\$ 249
4.5	#10 Turnout Concrete	each	\$ 118
4.6	#33 Crossover	each	\$ 1,136
4.7	#20 Crossover	each	\$ 710
Bridges-under			
5.1	Four Lane Urban Expressway	each	\$ 4,835
5.2	Four Lane Rural Expressway	each	\$ 4,025
5.3	Two Lane Highway	each	\$ 3,054
5.4	Rail	each	\$ 3,054
5.5	Minor river	each	\$ 810
5.6	Major River	each	\$ 8,098
5.65	Double Track High (50') Level Bridge	per LF	\$ -
5.70	Rehab for 110	per LF	\$ 14
5.71	Convert open deck bridge to ballast deck (single track)	per LF	\$ 4.7
5.72	Convert open deck bridge to ballast deck (double track)	per LF	\$ 9.4
5.73	Single Track on Flyover Structure	per LF	\$ 6
5.8	Single Track on Approach Embankment w/ Retaining Wal	per LF	\$ 3
	Ballasted Concrete Deck Replacement Bridge	per LF	\$ 2.1
	Land Bridges	per LF	\$ 1.5
Bridges-over			
6.1	Four Lane Urban Expressway	each	\$ 2,087
6.2	Four Lane Rural Expressway	each	\$ 2,929
6.3	Two Lane Highway	each	\$ 1,903
6.4	Rail	each	\$ 6,110
Crossings			
7.1	Private Closure	each	\$ 83
7.2	Four Quadrant Gates w/ Trapped Vehicle Detector	each	\$ 492
7.3	Four Quadrant Gates	each	\$ 288
7.31	Convert Dual Gates to Quad Gates	each	\$ 150
7.4a	Conventional Gates single mainline track	each	\$ 166
7.4b	Conventional Gates double mainline track	each	\$ 205
7.41	Convert Flashers Only to Dual Gate	each	\$ 50
7.5a	Single Gate with Median Barrier	each	\$ 180
7.5b	Convert Single Gate to Extended Arm	each	\$ 15
7.71	Precast Panels without Rdway Improvements	each	\$ 80
7.72	Precast Panels with Rdway Improvements	each	\$ 150
7.8	Michigan Type Grade Crossing Surface	each	\$ 15