TABLE 5-16.1
Finalist Roadway System Alternatives Scaled Ranking - Travel Performance

Alternative	Percentage	Scaled Formula	Scaled Scoring
Percent Increase in Regional Throughput due to Travel Efficiency in Study Area			
202	13%	$[((13^a - 13) / 9^b) \times 6^c] + 1 = 1.0$	1.0
203	11%	$[((13^a - 11) / 9^b) \times 6^c] + 1 = 2.3$	2.3
401	11%	$[((13^a - 11) / 9^b) \times 6^c] + 1 = 2.3$	2.3
501	7%	$[((13^a - 7) / 9^b) \times 6^c] + 1 = 5.0$	5.0
402	6%	$[((13^a - 6) / 9^b) \times 6^c] + 1 = 5.7$	5.7
404	5%	$[((13^a - 5) / 9^b) \times 6^c] + 1 = 6.3$	6.3
403	4%	$[((13^a - 4) / 9^b) \times 6^c] + 1 = 7.0$	7.0
Percent Improvement in Congestion Vehicle Miles of Travel on Secondary Roadways (PM Peak Period)			
202	20%	$[((20^a - 20) / 4^b) \times 6^c] + 1 = 1.0$	1.0
203	20%	$[((20^a - 20) / 4^b) \times 6^c] + 1 = 1.0$	1.0
403	20%	$[((20^a - 20) / 4^b) \times 6^c] + 1 = 1.0$	1.0
401	19%	$[((20^a - 19) / 4^b) \times 6^c] + 1 = 2.5$	2.5
402	19%	$[((20^a - 19) / 4^b) \times 6^c] + 1 = 2.5$	2.5
404	17%	$[((20^a - 17) / 4^b) \times 6^c] + 1 = 6.3$	5.5
501	16%	$[((20^a - 16) / 4^b) \times 6^c] + 1 = 7.0$	7.0
Percent Increase in Network Speeds on Principal Arterials (PM Peak Period)			
501	13%	$[((13^a - 13) / 9^b) \times 6^c] + 1 = 1.0$	1.0
404	10%	$[((13^a - 10) / 9^b) \times 6^c] + 1 = 3.0$	3.0
202	8%	$[((13^a - 8) / 9^b) \times 6^c] + 1 = 4.3$	4.3
401	8%	$[((13^a - 8) / 9^b) \times 6^c] + 1 = 4.3$	4.3
403	8%	$[((13^a - 8) / 9^b) \times 6^c] + 1 = 4.3$	4.3
402	7%	$[((13^a - 7) / 9^b) \times 6^c] + 1 = 5.0$	5.0
203	4%	$[((13^a - 4) / 9^b) \times 6^c] + 1 = 7.0$	7.0
Percent Savings in Annual Work Days Per Employee			
202	10%	$[((10^a - 10) / 10^b) \times 6^c] + 1 = 1.0$	1.0
203	10%	$[((10^a - 10) / 10^b) \times 6^c] + 1 = 1.0$	1.0
401	10%	$[((10^a - 10) / 10^b) \times 6^c] + 1 = 1.0$	1.0
501	10%	$[((10^a - 10) / 10^b) \times 6^c] + 1 = 1.0$	1.0
402	0%	$[((10^a - 0) / 10^b) \times 6^c] + 1 = 7.0$	7.0
403	0%	$[((10^a - 0) / 10^b) \times 6^c] + 1 = 7.0$	7.0
404	0%	$[((10^a - 0) / 10^b) \times 6^c] + 1 = 7.0$	7.0

TABLE 5-16.1
Finalist Roadway System Alternatives Scaled Ranking - Travel Performance

Alternative	Percentage	Scaled Formula	Scaled Scoring
Selected Trip Pair Travel Time Savings from Northwest Study Area to O'Hare West (PM Peak Period)			
203	40%	$[((40^a - 40) / 9^b) \times 6^c] + 1 = 1.0$	1.0
202	39%	$[((40^a - 39) / 9^b) \times 6^c] + 1 = 1.7$	1.7
402	37%	$[((40^a - 37) / 9^b) \times 6^c] + 1 = 3.0$	3.0
501	37%	$[((40^a - 37) / 9^b) \times 6^c] + 1 = 3.0$	3.0
403	36%	$[((40^a - 36) / 9^b) \times 6^c] + 1 = 3.7$	3.7
404	35%	$[((40^a - 35) / 9^b) \times 6^c] + 1 = 4.3$	4.3
401	31%	$[((40^a - 31) / 9^b) \times 6^c] + 1 = 7.0$	7.0
Selected Trip Pair Travel Time Savings from West Study Area to O'Hare West (PM Peak Period)			
403	41%	$[((41^a - 41) / 7^b) \times 6^c] + 1 = 1.0$	1.0
404	41%	$[((41^a - 41) / 7^b) \times 6^c] + 1 = 1.0$	1.0
402	40%	$[((41^a - 40) / 7^b) \times 6^c] + 1 = 1.0$	1.9
203	39%	$[((41^a - 39) / 7^b) \times 6^c] + 1 = 2.7$	2.7
202	38%	$[((41^a - 38) / 7^b) \times 6^c] + 1 = 3.6$	3.6
401	38%	$[((41^a - 38) / 7^b) \times 6^c] + 1 = 3.6$	3.6
501	34%	$[((41^a - 34) / 7^b) \times 6^c] + 1 = 7.0$	7.0
Area (square mile) with Travel Time Savings of Greater Than 5 percent in Study Area (PM Peak Period)			
202	59 mi^2	$[((59^a - 59) / 11^b) \times 6^c] + 1 = 1.0$	1.0
403	54 mi^2	$[((59^a - 54) / 11^b) \times 6^c] + 1 = 3.7$	3.7
203	52 mi^2	$[((59^a - 52) / 11^b) \times 6^c] + 1 = 4.8$	4.8
401	50 mi^2	$[((59^a - 50) / 11^b) \times 6^c] + 1 = 5.9$	5.9
402	50 mi^2	$[((59^a - 50) / 11^b) \times 6^c] + 1 = 5.9$	5.9
501	49 mi^2	$[((59^a - 49) / 11^b) \times 6^c] + 1 = 6.5$	6.5
404	48 mi^2	$[((59^a - 48) / 11^b) \times 6^c] + 1 = 7.0$	7.0
Percent Increase in Area with Travel within 5 Minutes to Interstate (PM Peak Period)			
203	24%	$[((24^a - 24) / 5^b) \times 6^c] + 1 = 1.0$	1.0
202	22%	$[((24^a - 22) / 5^b) \times 6^c] + 1 = 3.4$	3.4
401	22%	$[((24^a - 22) / 5^b) \times 6^c] + 1 = 3.4$	3.4
402	21%	$[((24^a - 21) / 5^b) \times 6^c] + 1 = 4.6$	4.6
403	21%	$[((24^a - 21) / 5^b) \times 6^c] + 1 = 4.6$	4.6
501	21%	$[((24^a - 21) / 5^b) \times 6^c] + 1 = 4.6$	4.6
404	19%	$[((24^a - 19) / 5^b) \times 6^c] + 1 = 7.0$	7.0

TABLE 5-16.1
Finalist Roadway System Alternatives Scaled Ranking - Travel Performance

Alternative	Percentage	Scaled Formula	Scaled Scoring
Percent Increase in Trips within 5 Minutes to Interstate (PM Peak Period)			
203	53	$[((53^a - 53) / 14^b) \times 6^c] + 1 = 1.0$	1.0
202	44	$[((53^a - 44) / 14^b) \times 6^c] + 1 = 4.9$	4.9
401	42	$[((53^a - 42) / 14^b) \times 6^c] + 1 = 4.9$	5.7
403	42	$[((53^a - 42) / 14^b) \times 6^c] + 1 = 4.9$	5.7
402	40	$[((53^a - 40) / 14^b) \times 6^c] + 1 = 6.6$	6.6
404	39	$[((53^a - 39) / 14^b) \times 6^c] + 1 = 7.0$	7.0
501	39	$[((53^a - 39) / 14^b) \times 6^c] + 1 = 7.0$	7.0

[a] Number represents the highest value of the criteria.

[b] Difference between the highest and lowest value of the criteria.

[c] 6 represents point spread for scoring system (1 = best, 7 = worst) and was used to translate the alternative performance results for each criteria to a common scoring system

TABLE 5-16.2
Finalist Roadway System Alternatives Scaled Ranking - Initial Construction and Right-of-Way Costs

Alternative	Cost	Scaled Formula	Scaled Scoring
Initial Total Costs			
501	$2.1 B	$[((2.1 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 1.0$	1.0
402	$2.5 B	$[((2.5 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 2.6$	2.6
401	$2.6 B	$[((2.6 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 3.0$	3.0
403	$3.0 B	$[((3.0 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 4.6$	4.6
404	$3.2 B	$[((3.2 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 5.4$	5.4
202	$3.3 B	$[((3.3 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 5.8$	5.8
203	$3.6 B	$[((3.6 - 2.1^a) / 1.5^b) \times 6^c] + 1 = 7.0$	7.0

[a] Number represents the lowest value of the criteria.

[b] Difference between the highest and lowest value of the criteria.

[c] 6 represents point spread for scoring system (1 = best, 7 = worst) and was used to translate the alternative performance results for each criteria to a common scoring system

TABLE 5-16.3
Finalist Roadway System Alternatives Scaled Ranking – Environmental Impacts

Alternative	Impact	Scaled Formula	Scaled Scoring
		Acres of Wetlands Impacted	
501	25.9 ac	$[((25.9 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 1.0$	1.0
404	26.1 ac	$[((26.1 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 1.6$	1.6
402	26.5 ac	$[((26.5 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 2.7$	2.7
401	26.9 ac	$[((26.9 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 3.9$	3.9
202	27.1 ac	$[((27.1 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 4.4$	4.4
403	27.5 ac	$[((27.5 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 5.6$	5.6
203	28.0 ac	$[((28.0 - 25.9^{a}) / 2.1^{b}) \times 6^{c}] + 1 = 7.0$	7.0
		Acres of Waters Impacted	
401	2.7 ac	$[((2.7 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 1.0$	1.0
403	2.7 ac	$[((2.7 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 1.0$	1.0
501	2.8 ac	$[((2.8 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 1.1$	1.1
202	3.2 ac	$[((3.2 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 1.9$	1.9
402	4.0 ac	$[((4.0 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 3.0$	3.0
404	6.3 ac	$[((6.3 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 6.6$	6.6
203	6.6 ac	$[((6.6 - 2.7^{a}) / 3.9^{b}) \times 6^{c}] + 1 = 7.0$	7.0
		Acre-Feet of Stormwater Detention	
501	55.8 ac-ft	$[((55.8 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 1.0$	1.0
404	166.8 ac-ft	$[((166.8 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 5.2$	5.2
402	178.8 ac-ft	$[((178.8 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 5.6$	5.6
401	184.9 ac-ft	$[((184.9 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 5.8$	5.8
202	192.0 ac-ft	$[((192.0 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 6.1$	6.1
203	203.0 ac-ft	$[((203.0 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 6.5$	6.5
403	216.2 ac-ft	$[((216.2 - 55.8^{a}) / 160.4^{b}) \times 6^{c}] + 1 = 7.0$	7.0
		Acres of 100 Year Floodplains Impacted	
404	17.6 ac	$[((17.6 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 1.0$	1.0
203	24.6 ac	$[((24.6 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 4.7$	4.7
402	24.6 ac	$[((24.6 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 4.7$	4.7
501	28.7 ac	$[((28.7 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 6.8$	6.8
202	29.1 ac	$[((29.1 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 7.0$	7.0
401	29.1 ac	$[((29.1 - 17.6^{a}) / 11.5^{b}) \times 6^{c}] + 1 = 7.0$	7.0

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TABLE 5-16.3
Finalist Roadway System Alternatives Scaled Ranking – Environmental Impacts

Alternative	Impact	Scaled Formula	Scaled Scoring
403	29.1 ac	$[((29.1 - 17.6\,^a) / 11.5\,^b) \times 6^c] + 1 = 7.0$	7.0
Acres of Designated/Recreational Lands Impacted			

Alternative	Impact	Scaled Formula	Scaled Scoring
403	29.1 ac	$[((29.1 - 17.6\,^a) / 11.5\,^b) \times 6^c] + 1 = 7.0$	7.0
Acres of Designated/Recreational Lands Impacted			
402	6.5 ac	$[((6.5 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 1.0$	1.0
202	6.7 ac	$[((6.7 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 1.1$	1.1
401	6.7 ac	$[((6.7 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 1.1$	1.1
203	9.1 ac	$[((9.1 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 3.2$	3.2
501	12.5 ac	$[((12.5 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 6.1$	6.1
403	13.4 ac	$[((13.4 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 7.0$	7.0
404	13.4 ac	$[((13.4 - 6.5\,^a) / 6.9\,^b) \times 6^c] + 1 = 7.0$	7.0
Number of Parks Impacted by Improvement			
402	3	$[((3 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 1.0$	1.0
202	4	$[((4 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 2.2$	2.2
203	4	$[((4 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 2.2$	2.2
401	5	$[((5 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 3.4$	3.4
404	6	$[((6 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 4.6$	4.6
403	7	$[((7 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 5.8$	5.8
501	8	$[((8 - 3\,^a) / 5\,^b) \times 6^c] + 1 = 7.0$	7.0
Potential Number of State-Listed Threatened and Endangered Species Sites Impacted			
202	0	$[((0 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 1.0$	1.0
203	0	$[((0 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 1.0$	1.0
401	0	$[((0 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 1.0$	1.0
402	0	$[((0 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 1.0$	1.0
403	4	$[((4 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 7.0$	7.0
404	4	$[((4 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 7.0$	7.0
501	4	$[((4 - 0\,^a) / 4\,^b) \times 6^c] + 1 = 7.0$	7.0
Number of Archaeological Sites Impacted			
402	21	$[((21 - 21\,^a) / 11\,^b) \times 6^c] + 1 = 1.0$	1.0
401	23	$[((23 - 21\,^a) / 11\,^b) \times 6^c] + 1 = 2.1$	2.1
202	25	$[((25 - 21\,^a) / 11\,^b) \times 6^c] + 1 = 3.2$	3.2
203	28	$[((28 - 21\,^a) / 11\,^b) \times 6^c] + 1 = 4.8$	4.8
403	28	$[((28 - 21\,^a) / 11\,^b) \times 6^c] + 1 = 4.8$	4.8

TABLE 5-16.3
Finalist Roadway System Alternatives Scaled Ranking – Environmental Impacts

Alternative	Impact	Scaled Formula	Scaled Scoring
501	29	$[((29 - 21^a) / 11^b) \times 6^c] + 1 = 5.4$	5.4
404	32	$[((32 - 21^a) / 11^b) \times 6^c] + 1 = 7.0$	7.0

[a] Number represents the lowest value of the criteria.

[b] Difference between the highest and lowest value of the criteria.

[c] 6 represents point spread for scoring system (1 = best, 7 = worst) and was used to translate the alternative performance results for each criteria to a common scoring system

TABLE 5-16.4
Finalist Roadway System Alternatives Scaled Ranking – Socioeconomic Impacts

Alternative	Impact	Scaled Formula	Scaled Scoring
Total Structures Potentially Displaced			
402	47	$[((47 - 47^a) / 121^b) \times 6^c] + 1 = 1.0$	1.0
203	57	$[((57 - 47^a) / 121^b) \times 6^c] + 1 = 1.5$	1.5
401	58	$[((58 - 47^a) / 121^b) \times 6^c] + 1 = 1.5$	1.5
202	103	$[((103 - 47^a) / 121^b) \times 6^c] + 1 = 3.8$	3.8
501	144	$[((144 - 47^a) / 121^b) \times 6^c] + 1 = 5.8$	5.8
404	146	$[((146 - 47^a) / 121^b) \times 6^c] + 1 = 5.9$	5.9
403	168	$[((168 - 47^a) / 121^b) \times 6^c] + 1 = 7.0$	7.0
Number of Noise Sensitive Areas			
402	31	$[((31 - 31^a) / 23^b) \times 6^c] + 1 = 1.0$	1.0
401	33	$[((33 - 31^a) / 23^b) \times 6^c] + 1 = 1.5$	1.5
203	36	$[((36 - 31^a) / 23^b) \times 6^c] + 1 = 2.3$	2.3
202	37	$[((37 - 31^a) / 23^b) \times 6^c] + 1 = 2.6$	2.6
403	52	$[((52 - 31^a) / 23^b) \times 6^c] + 1 = 6.5$	6.5
501	53	$[((53 - 31^a) / 23^b) \times 6^c] + 1 = 6.7$	6.7
404	54	$[((54 - 31^a) / 23^b) \times 6^c] + 1 = 7.0$	7.0
Lost Tax Revenue			
501	$1.5 M	$[((1.5 - 1.5^a) / 4^b) \times 6^c] + 1 = 1.0$	1.0
404	$2.0 M	$[((2.0 - 1.5^a) / 4^b) \times 6^c] + 1 = 1.8$	1.8
402	$2.8 M	$[((2.8 - 1.5^a) / 4^b) \times 6^c] + 1 = 3.0$	3.0
401	$3.3 M	$[((3.3 - 1.5^a) / 4^b) \times 6^c] + 1 = 3.7$	3.7
403	$3.4 M	$[((3.4 - 1.5^a) / 4^b) \times 6^c] + 1 = 3.9$	3.9
203	$3.9 M	$[((3.9 - 1.5^a) / 4^b) \times 6^c] + 1 = 4.6$	4.6
202	$5.5 M	$[((5.5 - 1.5^a) / 4^b) \times 6^c] + 1 = 7.0$	7.0

TABLE 5-16.4
Finalist Roadway System Alternatives Scaled Ranking – Socioeconomic Impacts

Alternative	Impact	Scaled Formula	Scaled Scoring
Employees Displaced			
501	85	$[((85 - 85^a) / 1275^b) \times 6^c] + 1 = 1.0$	1.0
404	490	$[((490 - 85^a) / 1275^b) \times 6^c] + 1 = 2.9$	2.9
402	760	$[((760 - 85^a) / 1275^b) \times 6^c] + 1 = 4.2$	4.2
401	820	$[((820 - 85^a) / 1275^b) \times 6^c] + 1 = 4.5$	4.5
403	945	$[((945 - 85^a) / 1275^b) \times 6^c] + 1 = 5.0$	5.0
203	1065	$[((1065 - 85^a) / 1275^b) \times 6^c] + 1 = 5.6$	5.6
7.0	1360	$[((1360 - 85^a) / 1275^b) \times 6^c] + 1 = 7.0$	7.0
Number of Historic Cemeteries Impacted by Improvement			
202	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
203	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
401	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
402	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
403	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
404	0	$[((0 - 0^a) / 1^b) \times 6^c] + 1 = 1.0$	1.0
501	1	$[((1 - 0^a) / 1^b) \times 6^c] + 1 = 7.0$	7.0
Total Number of Community Facilities Impacted (Churches, Hospitals, Schools, Fire/Police Stations)			
203	1	$[((1 - 1^a) / 3^b) \times 6^c] + 1 = 1.0$	1.0
401	1	$[((1 - 1^a) / 3^b) \times 6^c] + 1 = 1.0$	1.0
402	1	$[((1 - 1^a) / 3^b) \times 6^c] + 1 = 1.0$	1.0
202	2	$[((2 - 1^a) / 3^b) \times 6^c] + 1 = 3.0$	3.0
403	4	$[((4 - 1^a) / 3^b) \times 6^c] + 1 = 7.0$	7.0
404	4	$[((4 - 1^a) / 3^b) \times 6^c] + 1 = 7.0$	7.0
501	4	$[((4 - 1^a) / 3^b) \times 6^c] + 1 = 7.0$	7.0

[a] Number represents the lowest value of the criteria.

[b] Difference between the highest and lowest value of the criteria.

[c] 6 represents point spread for scoring system (1 = best, 7 = worst) and was used to translate the alternative performance results for each criteria to a common scoring system

TABLE 5-16.5
Finalist Roadway System Alternatives Scaled Ranking Totals

	Alternative						
	202	**203**	**401**	**402**	**403**	**404**	**501**
Travel Performance	21.8	21.9	35.8	42.1	38.0	48.2	42.1
Initial Costs	5.8	7.0	3.0	2.6	4.6	5.4	1.0
Environmental Impacts	26.9	36.4	25.3	20.0	45.2	39.9	35.4
Socioeconomic Impacts	24.3	16.0	13.2	11.1	30.4	25.6	28.5
Total	**79**	**81**	**77**	**76**	**118**	**119**	**107**