APPENDIX E - THE SUPPORTING DATA FOR 4.4 (FLEXIBILITY AND DEPLOYMENT)

E.1. THE EVALUATION CRITERIA DEVELOPED AND APPLIED TO SCORE EACH CONCEPT

This section describes the criteria for evaluating the candidate concepts against each of the system objectives related to flexibility and deployment.

The scoring process was based on the following symbol conversion for the criteria definitions:

&	=	-9
#	=	-6
-	=	-3
0	=	0
+	=	+3
x	=	+6

The page numbers refer to the System Objectives are characteristics document of May 1995.

Inclement Weather (p. 23)

(-) Performance (safety or throughput) is degraded (as compared to nominal operations) in this concept due to inclement weather.
(+) Performance (safety or throughput) is unaffected in this concept due to inclement weather.

Infrastructure Compatibility (p. 26)

(&) This concept requires extensive modifications to the infrastructure, e.g. creation of new travel lanes or entry/exit lanes.
(#) This concept requires some modifications to the infrastructure, e.g. installation of communication and control equipment.
(-) This concept requires minimal modifications to the infrastructure, e.g. lane markers, magnetic nails or tape.
(0) This concept requires no modifications to the infrastructure.

Phased-in Implementation of Technology (p. 27)

(-) For this concept, technology cannot be phased-in. Requires an "all or nothing" implementation.
(+) For this concept, technology can be phased-in through discrete, logical steps, optimizing use of technology as it becomes available.

Public Acceptance (p. 27)

(-) The public may view the AHS, as a whole, negatively because of potential risks and problems associated with deployment of this concept.
(0) Public perception of AHS technology will not be affected by the deployment of this concept.
(+) Positive public perception of the AHS expected through deployment of this concept.

High Availability – System Malfunction (p. 28)

(-) This concept is highly complex, increasing the likelihood of system malfunctions causing performance degradation or AHS shut down.
(+) This concept is perceived to be simple, such that the design is not prone to performance degradation due to system malfunctions.

Emergency Vehicles (p. 28)

(-) Response to emergencies (e.g. medical or obstacle removal) will be less effective in this concept, as compared to today's systems.
(0) Response to emergencies (e.g. medical or obstacle removal) will be as effective in this concept, as compared to today's systems.
(+) Response to emergencies (e.g. medical or obstacle removal) will be improved by this concept, as compared to today's systems.

Rural Roadways (Mixed Traffic: AHS mixed with Non-AHS Vehicles) (p. 28, 31)

(-) This concept cannot support automated operation of AHS-equipped vehicles on non-AHS dedicated lanes.
(+) This concept may allow some features of AHS to be used on non-AHS dedicated lanes.
(x) This concept allows for automation of AHS vehicles on non-AHS dedicated lanes.

Support a Wide Range of Vehicle Classes (p. 31)

(-) This concept is exclusive to a single class of vehicles (independent of number of lanes).
(+) This concept allows a wide range of vehicle classes to operate on AHS lanes.

Enhance Operations for Freight Carriers (p. 32)

(-) It will not be possible to give priority access to freight carriers in this concept.
(+) Priority to freight carriers, at the discretion of the regional transportation authority, is possible in this concept.

Enhance Operations for Transit Operations (p. 32)

(-) It will not be possible to give priority access to transit vehicles in this concept.
(+) Priority to transit vehicles, at the discretion of the regional transportation authority, is possible in this concept.

Provide System Modularity (p. 33)

(-) This design concept is not a modular architecture.
(+) This concept provides system modularity allowing subsystems and components to be upgraded to accommodate advances in technology.

E.2 THE SPREADSHEET SCORING MATRICES, SUMMARY CHARTS AND GRAPHS DERIVED FROM THE SCORING PROCESS.

Following are the completed evaluation sheets submitted by each of the Flexibility Team members.

Sobetski's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	-3	0	3	3	3	0	6	3	-3	-3	3	12	2.5
01b	-3	0	3	3	3	0	6	3	-3	-3	3	12	2.5
02	-3	-9	-3	-3	-3	3	-3	3	3	3	3	-9	21
03	-3	-9	-3	-3	-3	-3	-3	3	3	3	3	-15	23
03a	-3	-9	3	0	-3	-3	-3	3	3	3	3	-6	20
04	-3	-9	3	0	3	3	6	3	3	3	3	15	1
05	-3	-3	3	0	-3	0	3	3	3	3	3	9	4
06	-3	-9	3	0	3	0	3	3	-3	-3	3	-3	16
08a	-3	-9	3	0	3	0	3	3	-3	-3	3	-3	16
08b	-3	-9	3	3	3	0	6	3	-3	-3	3	3	6
09	-3	-9	3	0	-3	0	3	3	-3	-3	3	-9	21
10	-3	-6	3	3	-3	0	-3	3	3	3	3	3	6
11	-3	-6	3	0	-3	0	-3	3	3	3	3	0	10
12a	-3	-9	3	0	-3	0	-3	3	3	3	3	-3	16
12b	-3	-9	3	0	-3	0	-3	3	3	3	3	-3	16
13	-3	-9	3	0	-3	0	-3	3	3	3	3	-3	16
14	-3	-6	3	0	-3	0	-3	3	3	3	3	0	10
15	-3	-6	3	0	-3	0	-3	3	3	3	3	0	10
16	-3	-6	3	0	-3	0	-3	3	3	3	3	0	10
17	-3	-6	3	3	3	0	3	3	-3	-3	3	3	6
18	-3	-9	3	3	3	0	3	3	-3	-3	3	0	10
19	-3	-9	3	0	-3	0	-3	3	3	3	3	-3	16
20	-3	-9	3	0	-3	0	-3	3	3	3	3	-3	16
Ave	-3	-7.2	2.48	0.52	-0.9	0	0.13	3	0.91	0.91	3	-0.13	

Bayouth's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	3	0	3	3		0	3	3	-3	-3		9	10
01b	3	0	3	3		0	3	3	-3	-3		9	10
02	-3	-9	-3	-3		3	-3	3	3	3		-9	21
03	-3	-9	-3	-3		3	-3	3	3	3		-9	21
03a	-3	-9	-3	3		3	3	3	3	3		3	15
04	-3	-9	3	3		3	3	3	3	3		9	10
05	-3	-9	3	3		3	3	3	3	3		9	10
06	-3	-9	-3	-3		3	-3	3	3	3		-9	21
08a	3	-9	-3	-3		3	-3	3	3	3		-3	17
08b	-3	-9	3	3		3	3	3	3	3		9	10
09	-3	-9	3	3		3	3	3	3	3		9	10
10	3	-9	3	3		0	3	3	-3	-3		0	16
11	-3	-9	3	3		3	3	3	3	3		9	10
12a	3	-9	3	3		3	3	3	3	3		15	2
12b	3	-9	3	3		3	3	3	3	3		15	2
13	-3	-9	3	3		3	3	3	3	3		9	10
14	-3	-9	-3	-3		3	-3	3	3	3		-9	21
15	-3	-6	3	3		3	3	3	3	3		12	5
16	-3	-6	3	3		3	3	3	3	3		12	5
17	-3	-6	3	3		3	3	3	3	3		12	5
18	3	-9	3	3		3	3	3	3	3		15	2
19	-3	-9	-3	-3		3	-3	3	3	3		-9	21
20	-3	-9	-3	-3		3	-3	3	3	3		-9	21
Ave	-1.2	-7.8	0.91	1.17	0	2.61	1.17	3	2.22	2.22	0	4.304	

Schuster's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	-3	-3	3	-3	3	0	3	3	3	3	3	12	16
01b	-3	0	3	3	-3	3	6	3	3	3	3	21	5
02	3	-9	-3	-3	-3	3	-3	3	3	3	-3	-9	22
03	3	-9	-3	-3	-3	3	-3	3	3	3	-3	-9	22
03a	3	-9	-3	3	3	3	-3	3	3	3	3	9	19
04	-3	-9	3	3	3	0	3	3	3	3	3	12	16
05	-3	-9	3	0	3	0	3	3	3	3	3	9	20
06	3	-9	3	3	3	3	3	3	3	3	3	21	5
08a	3	-9	3	3	3	3	3	3	3	3	3	21	5
08b	3	-9	3	3	3	0	3	3	3	3	3	18	10
09	3	-9	3	0	3	3	3	3	3	3	3	18	10
10	3	-9	3	3	3	3	3	3	3	3	3	21	5
11	3	-9	3	0	3	3	3	3	3	3	3	18	10
12a	3	-9	3	3	3	3	3	3	3	3	3	21	5
12b	3	-9	3	3	3	3	3	3	3	3	3	21	5
13	3	-9	3	0	3	3	3	3	3	3	3	18	10
14	-3	-9	3	0	3	3	3	3	3	3	3	12	16
15	-3	-6	3	3	3	0	3	3	3	3	3	15	13
16	3	-6	3	3	3	3	3	3	3	3	3	24	1
17	3	-6	3	0	3	3	3	3	3	3	3	21	5
18	-3	-9	3	3	3	0	3	3	3	3	3	12	16
19	-3	-9	3	0	3	3	3	3	3	3	3	12	16
20	-3	-9	3	3	3	-3	3	3	3	3	3	9	20
Ave	0.65	-8	2.22	1.3	2.22	1.96	2.35	3	3	3	2.48	14.22	

McKendree's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	-3	0	3	-3	3	0	6	3	3	3	3	18	2
01b	-3	0	3	3	3	0	6	3	3	3	3	24	1
02	-3	-9	-3	-3	-3	0	-3	3	3	3	3	-12	22
03	-3	-9	-3	-3	-3	0	-3	3	3	3	3	-12	22
03a	-3	-9	3	0	-3	0	3	3	3	3	3	3	21
04	-3	-9	3	0	3	0	3	3	3	3	3	9	13
05	-3	-9	3	0	3	0	3	3	3	3	3	9	13
06	-3	-9	3	0	3	0	3	3	3	3	3	9	13
08a	-3	-9	3	0	3	0	3	3	3	3	3	9	13
08b	-3	-9	3	0	-3	0	3	3	3	3	3	3	20
09	-3	-9	3	0	3	0	3	3	3	3	3	9	13
10	-3	-9	3	0	3	0	3	3	3	3	3	9	13
11	-3	-9	3	0	3	0	3	3	3	3	3	9	13
12a	-3	-9	3	0	3	0	3	3	3	3	3	9	13
12b	-3	-9	3	0	3	0	3	3	3	3	3	9	13
13	-3	-9	3	0	3	0	3	3	3	3	3	9	13
14	-3	-9	3	0	3	0	3	3	3	3	3	9	13
15	-3	-6	3	3	-3	3	3	3	3	3	3	12	5
16	-3	-6	3	0	3	3	3	3	3	3	3	15	4
17	-3	-3	3	0	3	3	3	3	3	3	3	18	3
18	-3	-9	3	0	3	0	3	3	3	3	3	9	13
19	-3	-9	3	0	3	0	3	3	3	3	3	9	13
20	-3	-9	3	0	3	3	3	3	3	3	3	12	6
Ave	-3	-7.7	2.48	-0.1	1.7	0.52	2.74	3	3	3	3	8.609	

Chen's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	3	-3	3	3	3	3	3	3	3	3	3	27	1
01b	-3	-3	3	3	-3	3	6	3	3	3	3	18	2
02												0	
03	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
03a													
04	3	-9	3	3	-3	3	3	3	3	3	3	15	8
05	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
06	3	-9	3	3	-3	3	3	3	3	3	3	15	8
08a	3	-9	3	3	-3	3	3	3	3	3	3	15	8
08b	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
09	3	-9	3	3	-3	3	3	3	3	3	3	15	8
10	3	-9	3	3	-3	3	3	3	3	3	3	15	8
11	3	-9	3	3	-3	3	3	3	3	3	3	15	8
12a	3	-9	3	3	-3	3	3	3	3	3	3	15	8
12b	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
13	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
14	3	-9	3	3	-3	3	3	3	3	3	3	15	8
15												0	
16	3	-9	3	3	-3	3	3	3	3	3	3	15	8
17	3	-9	3	3	-3	3	3	3	3	3	3	15	8
18	-3	-9	3	3	-3	3	3	3	3	3	3	9	17
19	3	-9	3	3	-3	3	3	3	3	3	3	15	8
20	3	-9	3	3	-3	3	3	-3	3	3	3	9	17
Ave	2.09	-7.3	2.61	2.61	-2.3	2.61	2.74	1.04	2.61	2.61	2.61	11.87	

Siddiqui's Evaluation Sheet

Concept No.	Inclement Weather	Infrastructure Compatibility	Phase-in Technology	Public Acceptance	High Availability—Malfunction	Emergency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Operations	System Modularity	Score	Rank
01a	3	-3	3	3	3	0	3	3	-3	-3	3	12	2
01b	-3	0	3	3	-3	0	6	3	-3	-3	3	6	4
02	-3	-9	-3	-3	-3	3	-3	3	3	3	-3	-15	22
03	-3	-9	-3	-3	-3	-3	-3	3	3	3	-3	-21	23
03a	-3	-9	3	3	-3	-3	-3	3	3	3	3	3	9
04	-3	-6	3	3	-3	0	3	3	-3	-3	3	-3	19
05	-3	-3	3	3	-3	0	3	3	-3	-3	3	0	16
06	-3	-6	3	3	-3	0	3	3	-3	-3	3	-3	19
08a	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
08b	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
09	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
10	-3	-6	3	3	-3	3	3	3	-3	-3	3	0	16
11	-3	-6	3	3	-3	3	3	3	3	3	3	12	2
12a	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
12b	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
13	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
14	-3	-6	3	3	-3	0	3	3	-3	-3	3	-3	19
15	-3	-6	3	3	-3	3	3	3	3	3	3	12	2
16	-3	-3	3	3	-3	0	3	3	-3	-3	3	0	16
17	-3	-6	3	3	-3	0	3	3	-3	-3	3	-3	19
18	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
19	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
20	-3	-9	3	3	-3	-3	3	3	3	3	3	3	9
Ave	-2.7	-6.9	2.48	2.48	-2.7	-0.9	2.35	3	0.65	0.65	2.48	1.043	

Overall Combined Evaluation Sheet

Concept No.	In-clement Weather	Infrast-ructure Compati bility	Phase-in Tech-nology	Public Accep-tance	High Avail-ability—Mal-function	Emer-gency Vehicles	Mixed Type w/ non-AHS	Vehicle Classes	Freight Carriers	Transit Opera-tions	System Modular-ity	TOTAL (Average Cumulative Rank)	TOTAL (Sum of Averaged Scores)	Weighted Score	Weighted Score Values
01a	0	-1.5	3	1	3	0.5	4	3	0	0	3	5.6	16	181	181
01b	-2	-0.5	3	3	-0.6	1	5.5	3	0	0	3	4.1	15.4	197	197
02	-1.8	-9	-3	-3	-3	2.4	-3	3	3	3	0	21.6	-11.4	-64	-64
03	-1	-9	-2	-2	-3	0.5	-2	2	3	3	0.6	21.3	-9.9	-46	-46
03a	-1.8	-9	0.6	1.8	-1.5	0	-0.6	3	3	3	3	16.8	1.5	60	60
04	-2	-8.5	3	2	0.6	1.5	3.5	3	2	2	3	11.2	10.1	147	147
05	-2	-7	3	1.5	-0.6	1	3	2	2	2	3	13.3	7.9	121	121
06	-1	-8.5	2	1	0.6	1.5	2	3	1	1	3	13.7	5.6	93	93
08a	0	-9	2	1	0.6	1	2	3	2	2	3	11.3	7.6	115	115
08b	-1	-9	3	2.5	-0.6	0.5	3.5	2	2	2	3	12.0	7.9	127	127
09	-1	-9	3	1.5	-0.6	1	3	3	2	2	3	11.8	7.9	129	129
10	0	-8	3	2.5	-0.6	1.5	2	3	1	1	3	10.7	8.4	112	112
11	-1	-8	3	1.5	-0.6	2	2	3	3	3	3	8.8	10.9	143	143
12a	0	-9	3	2	-0.6	1	2	3	3	3	3	8.8	10.4	143	143
12b	0	-9	3	2	-0.6	1	2	2	3	3	3	10.3	9.4	126	126
13	-1	-9	3	1.5	-0.6	1	2	2	3	3	3	12.5	7.9	116	116
14	-2	-8	2	0.5	-0.6	1.5	1	3	2	2	3	14.5	4.4	83	83
15	-3	-6	3	2.4	-1.5	1.8	1.8	3	3	3	3	7.0	10.5	142	142
16	-1	-6	3	2	-0.6	2	2	3	2	2	3	7.3	11.4	140	140
17	-1	-6	3	2	0.6	2	3	3	1	1	3	7.7	11.6	143	143
18	-2	-9	3	2.5	0.6	0.5	3	3	2	2	3	11.2	8.6	135	135
19	-2	-9	2	0.5	-0.6	1	1	3	3	3	3	13.8	4.9	96	96
20	-2	-9	2	1	-0.6	0.5	1	2	3	3	3	14.8	3.9	81	81
															5.71102
Ave	-1.2	-7.7	2.2	1.33	-0.5	1.16	1.9	2.74	2.13	2.13	2.77				1.12028
Norm	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4				6.39795
Pair	0.99	1.13	1	1.07	0.9	0.48	2.77	2.65	1.71	1.62	1.31	15.63			
Prod	6.33	7.23	6.4	6.85	5.76	3.07	17.7	17	10.9	10.4	8.38	100			

APPENDIX F - ACCEPTABILITY EVALUATION CRITERIA AND SENSITIVITY STUDIES

F.1 EVALUATION CRITERIA

This section gives the specific criteria used in evaluating the candidate concepts against the objectives discussed in Section 4.5.5 of the main volume.

From 4.5.5.1. Mobility/Access

Trip time predictability

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept supports an *significant* increase in trip time predictability relative to similar driving conditions under manual control
(+)	This concept supports a *moderate* increase in trip time predictability relative to similar driving conditions under manual control
(0)	This concept supports *no* change in trip time predictability relative to similar driving conditions under manual control
(-)	This concept supports a *moderate* decrease in trip time predictability relative to similar driving conditions under manual control
(--)	This concept supports a *significant* decrease in trip time predictability relative to similar driving conditions under manual control
(U)	Unable to determine extent of change in trip time predictability by this concept due to lack of sufficient information.

Trip time

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept supports a *significant* decrease in trip time relative to similar driving conditions under manual control
(+)	This concept supports *a decrease* in trip time compared to similar driving conditions under manual control
(0)	This concept supports *no* decrease in trip time relative to similar driving conditions under manual control
(-)	This concept supports *an increase* in trip time relative to similar driving conditions under manual control
(--)	This concept supports a *significant* increase in trip time relative to similar driving conditions under manual control
(U)	Unable to determine extent of change in trip time by this concept due to lack of sufficient information.

Accessibility

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	*Very* likely to increase accessibility to highway travel for widest range of potential travelers
(+)	*Somewhat* likely to increase accessibility to highway travel for widest range of potential travelers
(0)	Accessible by all who presently use highway system
(-)	Inaccessible to *some* individuals who presently use highway system
(--)	Inaccessible to *many* individuals who presently use highway system
(U)	Unable to determine extent of change in trip time by this concept due to lack of sufficient information.

Intermodal

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept supports intermodal transportation operations to a *tremendous* degree
(+)	This concept supports intermodal transportation operations to a *significant* degree.

(0)	This concept supports intermodal transportation operations to a *moderate* degree.
(-)	This concept supports intermodal transportation operations to a *minimal* degree.
(--)	This concept *does not* support intermodal transportation operations.
(U)	Unable to determine whether or not this concept would support intermodal transportation operations due to lack of sufficient information

From 4.5.5.2. User Issues

Adaptability/training

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept will require *no* prior AHS training or on-road AHS driving time for the driver to adapt (both physically and psychologically) to the AHS driving environment
(+)	This concept will require a *minimal* amount of prior AHS training or on-road AHS driving time for the driver to adapt to AHS driving environment.
(0)	This concept will require a *moderate* amount of prior AHS training or on-road AHS driving time for the driver to adapt to AHS driving environment.
(-)	This concept will require an *significant* amount of prior AHS training or on-road AHS driving time for the driver to adapt to AHS driving environment.
(--)	This concept will require a *tremendous* amount of prior AHS training or on-road AHS driving time for the driver to adapt to AHS driving environment.
(U)	Unable to determine extent of additional AHS driving time required due to lack of sufficient information.

Driver Participation (I)

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept allows drivers to engage in non-driving tasks to a *tremendous* degree
(+)	This concept allows drivers to engage in non-driving tasks to a *significant* degree
(0)	This concept allows drivers to engage in non-driving tasks to a *moderate* degree
(-)	This concept allows drivers to engage in non-driving tasks to a *minimal* degree
(--)	This concept does *not* allow drivers to engage in non-driving tasks
(U)	Unable to determine whether or not this concept would allow drivers to engage in non-driving tasks due to lack of sufficient information

Driver Participation (II)

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept allows drivers to remain actively engaged and to communicate with the system if desired and necessary to a *tremendous* degree
(+)	This concept allows drivers to remain actively engaged and to communicate with the system if desired and necessary to a *significant* degree
(0)	This concept allows drivers to remain actively engaged and to communicate with the system if desired and necessary to a *moderate* degree
(-)	This concept allows drivers to remain actively engaged and to communicate with the system if desired and necessary to a *minimal* degree

(--)	This concept does *not* allow drivers to remain engaged and to communicate with the system if desired and necessary
(U)	Unable to determine whether or not this concept would allow drivers to remain engaged due to lack of sufficient information

From 4.5.5.3. Environment

Vehicle Emissions

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept will support emissions reduction strategies on a per VKT basis to a *significant* degree.
(+)	This concept will support emissions reduction strategies on a per VKT basis to a *moderate* degree.
(0)	This concept will *not* change emissions on a per VKT basis.
(-)	This concept will *increase* emissions on a per VKT basis.
(--)	This concept will *significantly increase* emissions on a per VKT basis
(U)	Unable to determine if this concept will support emissions reduction strategies due to lack of sufficient information.

Fuel Consumption

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept will support fuel consumption reduction strategies on a per VKT basis to a *significant* degree.
(+)	This concept will support fuel consumption reduction strategies on a per VKT basis to a *moderate* degree.
(0)	This concept will *not* change fuel consumption on a per VKT basis.
(-)	This concept will lead to *increases* in fuel consumption on a per VKT basis.
(--)	This concept will lead to significant increases in fuel consumption on a per VKT basis.
(U)	Unable to determine if this concept will support fuel consumption reduction strategies due to lack of sufficient information.

Transportation Demand Management (TDM)/Transportation System Management (TSM)

Policies

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept is compatible with TDM measures and TSM strategies to counter the potential for induced demand effects to a tremendous degree.
(+)	This concept is compatible with TDM measures and TSM strategies to counter the potential for induced demand effects to a significant degree.
(0)	This concept is compatible with TDM measures and TSM strategies to counter the potential for induced demand effects to a moderate degree.
(-)	This concept is compatible with TDM measures and TSM strategies to counter the potential for induced demand effects to a minimal degree.
(--)	This concept is not compatible with TDM measures and TSM strategies to counter the potential for induced demand effects.
(U)	Unable to determine whether this concept is compatible with TDM measures and TSM strategies due to lack of sufficient information.

From 4.5.5.4. Other

Ease of construction & maintenance

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept, when implemented, will be *much easier* to construct and maintain relative to today's highways.

(+)	This concept, when implemented, will be *easier* to construct and maintain relative to today's highways.
(0)	This concept, when implemented, will be *as easy* to construct and maintain relative to today's highways.
(-)	This concept, when implemented, will be *more difficult* to construct and maintain relative to today's highways.
(--)	This concept, when implemented, will be *much more difficult* to construct and maintain relative to today's highways.
(U)	Unable to determine due to lack of sufficient information.

Ease of traffic operations

Attributes	*Evaluation Criteria and Ranking Levels*
(++)	This concept, when implemented, will be *much easier* to operate & manage relative to today's highways.
(+)	This concept, when implemented, will be *easier* to operate & manage relative to today's highways.
(0)	This concept, when implemented, will be *as easy* to operate & manage relative to today's highways.
(-)	This concept, when implemented, will be *more difficult* to operate & manage relative to today's highways.
(--)	This concept, when implemented, will be *much more difficult* to operate & manage relative to today's highways.
(U)	Unable to determine due to lack of sufficient information.

The results of the evaluation are depicted in the Figures 1-12, which depict all the alternative sensitivity analyses, ordered both by concept number as well as by evaluation score. The former method readily shows results corresponding to the original ordering of the concepts which were clustered by certain of the six dimensions. The latter method of illustrating the results clearly indicates where changes in scores occur as well as extent of such changes, i.e. steepness of changes in heights of bars corresponding to each concept score:

F.2 SENSITIVITY ANALYSIS

There were two areas where variability was allowed due to uncertainty. The first area was whether to keep or omit one of the evaluation criteria, namely, Driver participation (II). Four of the seven team members voted "U", and thus any representation of the results including that criteria would necessarily represent only a minority view. Instead of eliminating this criteria from further consideration, it was suggested by the team to include both cases in the sensitivity analyses to investigate the impact of this criteria. The second area was in the set of weights assigned to the twelve (or as just indicated, in some cases eleven) criteria. The default set of weights was equal weight for all criteria. Opinion from team members was solicited on different sets of weights to test out to perform sensitivity analyses to address the uncertainty in knowing which set of weights to use. Different sets of weights were used in conjunction with the original set of evaluation criteria as well as the slightly modified set of criteria (Driver participation (II) omitted).

The following sets of weights were used in the sensitivity analyses run:

1. Default set of weights: equal weights among the criteria
2. Trip time predictability, Accessibility, Vehicle emissions, Ease of construction & maintenance had equal weight and three times the weight of all other criteria, which were weighed equally among themselves.
3. Vehicle emissions, Fuel consumption, Ease of construction & maintenance, and Ease of traffic operations had equal weight and three times the weight of all other criteria, which were weighed equally among themselves.

Each of these sets of weights were used with and without the inclusion of the Driver Participation (II) criteria.

4.5.8 Evaluation Results

The results of the evaluation are depicted in the Figures 4.5.8-1 through 4.5.8-12, which depict all the alternative sensitivity analyses, ordered both by concept number as well as by evaluation score. The former method readily shows results corresponding to the original ordering of the concepts which were clustered by certain of the six dimensions. The latter method of illustrating the results clearly indicates where changes in scores occur as well as extent of such changes, i.e. steepness of changes in heights of bars corresponding to each concept score:

Labels used in the above figures are described as follows:

Driver Participation (II)	DP (II)
Trip time predictability	TTP
Accessibility	A
Vehicle emissions	VE
Ease of construction & maintenance	ECM
Fuel consumption	FC
Ease of traffic operations	ETO

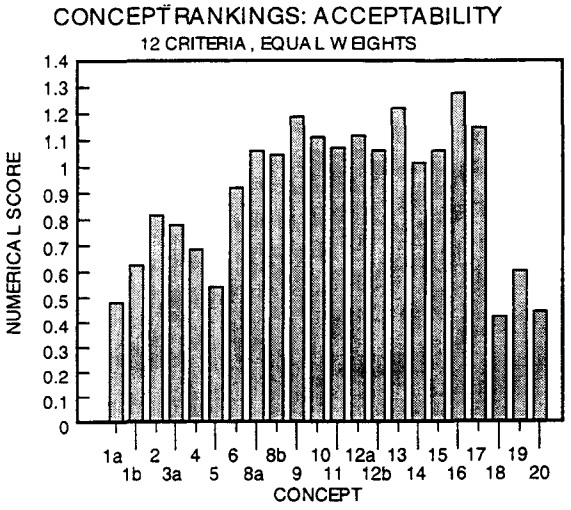

Figure 4.5.8-1. All 12 criteria, with weights as described in 1. above, ordered by concept number

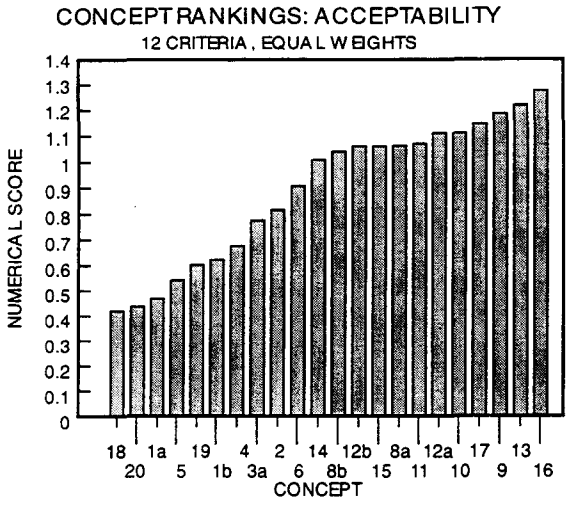

Figure 4.5.8-2. All 12 criteria, with weights as described in 1. above, ordered by evaluation score

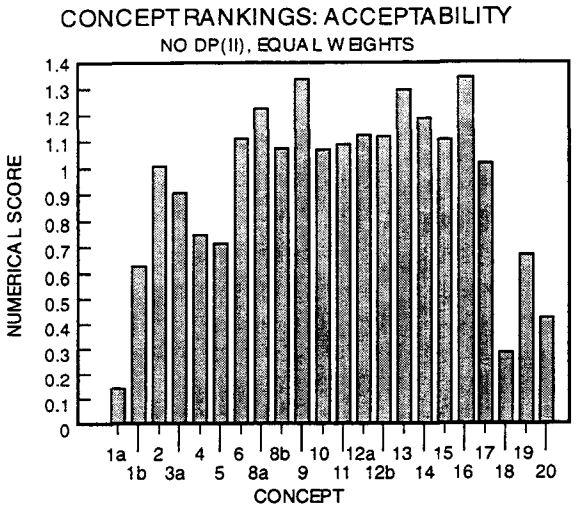

Figure 4.5.8-3. 11 criteria (omit Driver participation (II)), with weights as described in 1. above, ordered by concept number

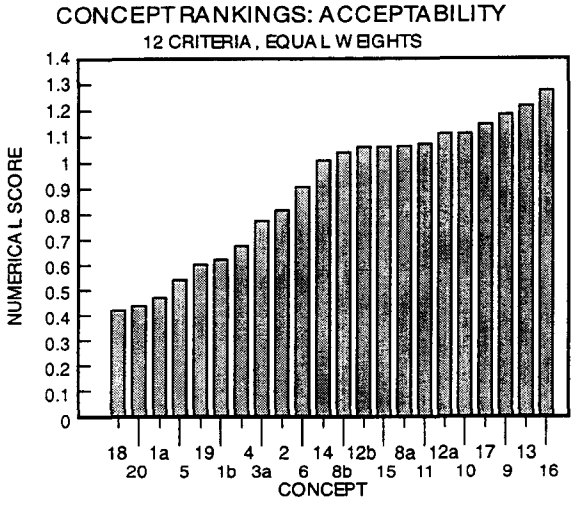

Figure 4.5.8-4. 11 criteria (omit Driver participation (II)), with weights as described in 1. above, ordered by evaluation score

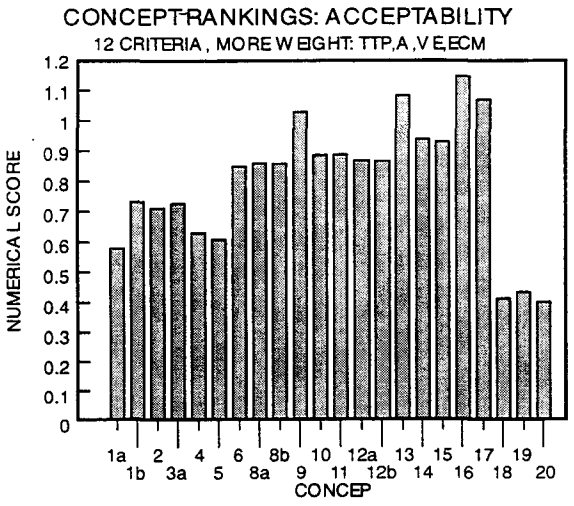

Figure 4.5.8-5. All 12 criteria, with weights as described in 2. above, ordered by concept number

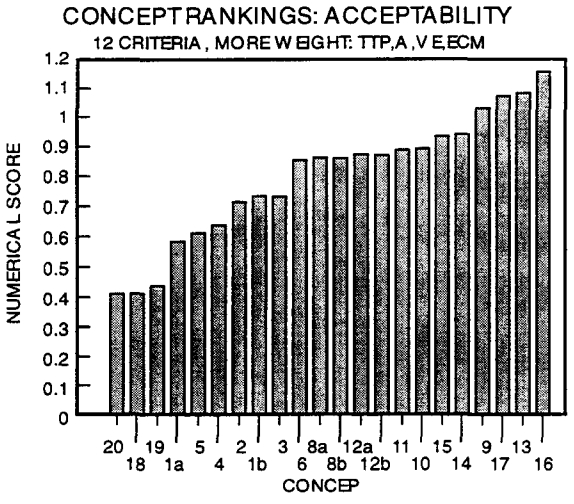

Figure 4.5.8-6. All 12 criteria, with weights as described in 2. above, ordered by evaluation score

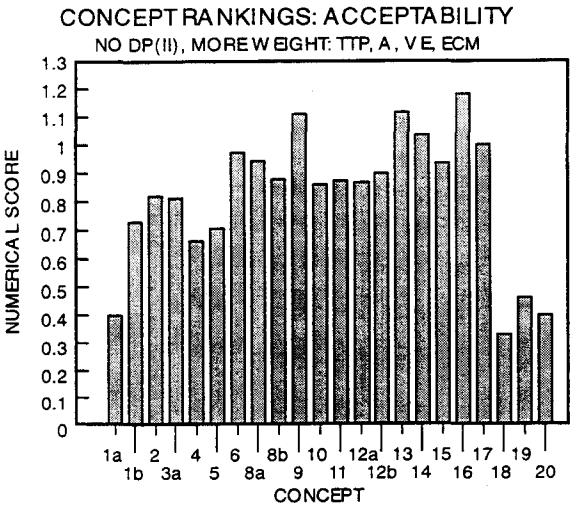

Figure 4.5.8-7. 11 criteria (omit Driver participation (II)), with weights as described in 2. above, ordered by concept number

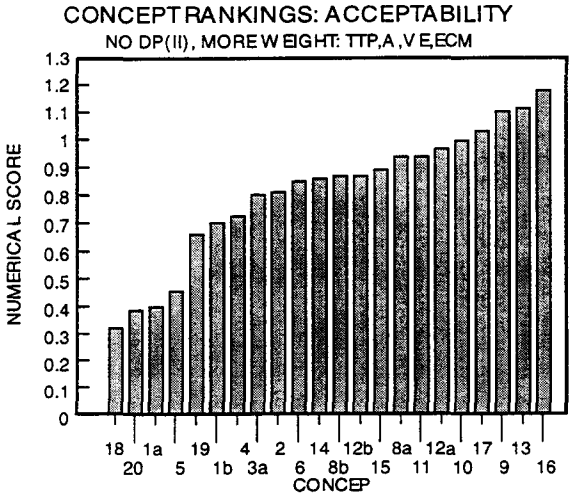

Figure 4.5.8-8. 11 criteria (omit Driver participation (II)), with weights as described in 2. above, ordered by evaluation score

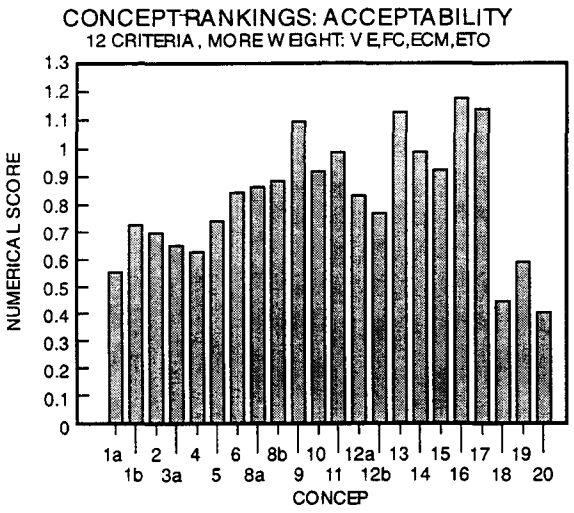

Figure 4.5.8-9. All 12 criteria, with weights as described in 3. above, ordered by concept number

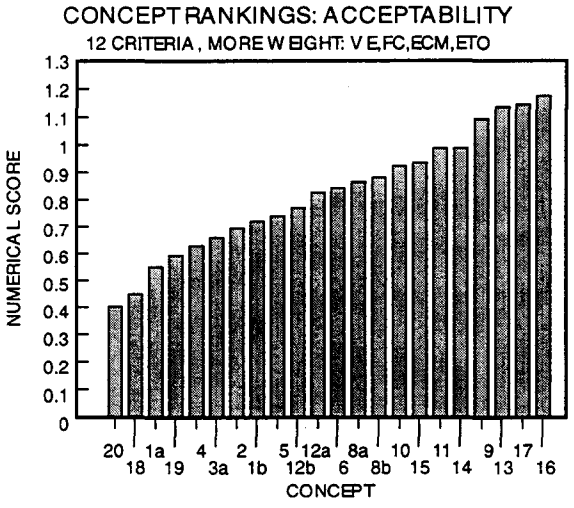

Figure 4.5.8-10. All 12 criteria, with weights as described in 3. above, ordered by evaluation score

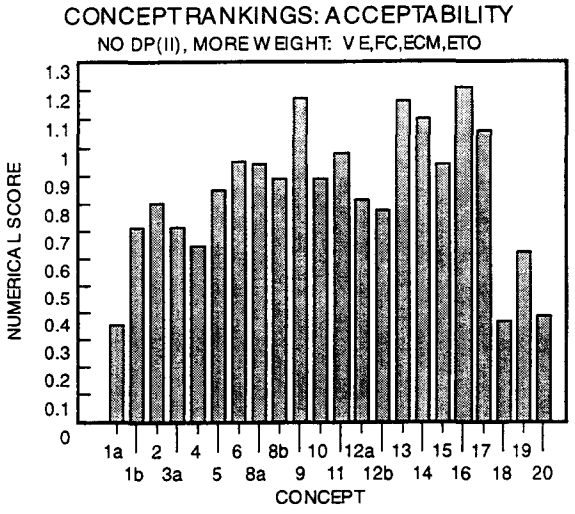

Figure 4.5.8-11. 11 criteria (omit Driver participation (II)), with weights as described in 3. above, ordered by concept number

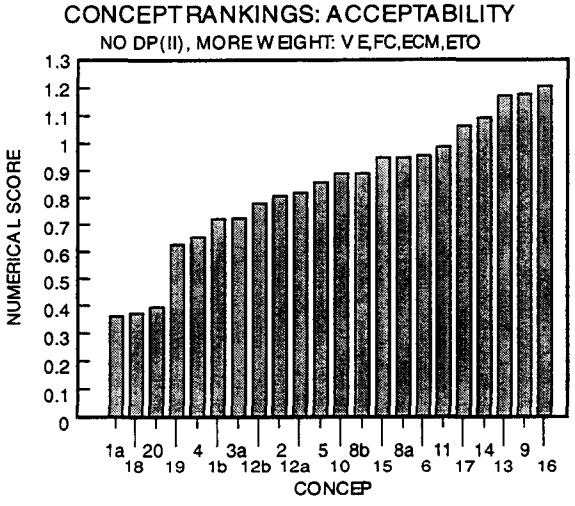

Figure 4.5.8-12. 11 criteria (omit Driver participation (II)), with weights as described in 3. above, ordered by evaluation score

APPENDIX G - OVERALL EVALUATION DATA

Below are the tables from the Excel spreadsheet that combined the various evaluations into the overall evaluation, as discussed in section 4.6 of the main report.

Concept Number	Intel Dist	Sep Pol	AHS/ Non AHS	Veh Cls	Entry/ Exit	Obstacles
1a	Auto	Free Agt	Full Mix	Mixed	Transition	Manual
1b	Auto	Free Agt	Full Mix	Mixed	Transition	Full Auto
2	Infra Cntrl	Free Agt	Phys Bar	Mixed	Dedicated	Full Auto
3a	Infra Spt	Slot	Phys Bar	Not Mixed	Dedicated	Full Auto
4	Coop	Free Agt	Bar w/ Gap	Mixed	Transition	Full Auto
5	Coop	Platoon	Bar w/ Gap	Mixed	Transition	Full Auto
6	Infra Spt	Free Agt	Bar w/ Gap	Mixed	Transition	Full Auto
8a	Infra Spt	Free Agt	Phys Bar	Mixed	Dedicated	Full Auto
8b	Infra Spt	Free Agt	Phys Bar	Not Mixed	Dedicated	Full Auto
9	Infra Spt	Platoon	Phys Bar	Mixed	Dedicated	Full Auto
10	Infra Mng	Free Agt	Bar w/ Gap	Mixed	Transition	Full Auto
11	Infra Mng	Platoon	Bar w/ Gap	Mixed	Transition	Full Auto
12a	Infra Mng	Free Agt	Phys Bar	Mixed	Dedicated	Full Auto
12b	Infra Mng	Free Agt	Phys Bar	Not Mixed	Dedicated	Full Auto
13	Infra Mng	Platoon	Phys Bar	Not Mixed	Dedicated	Full Auto
14	Infra Spt	Platoon	Bar w/ Gap	Mixed	Transition	Full Auto
15	Infra Mng	Free Agt	Full Mix	Mixed	Transition	Full Auto
16	Infra Spt	Free Agt	Virt Bar	Mixed	Transition	Full Auto
17	Coop	Platoon	Virt Bar	Mixed	Transition	Full Auto
18	Coop	Free Agt	Phys Bar	Mixed	Dedicated	Auto/Man
19	Infra Mng	Platoon	Phys Bar	Mixed	Dedicated	Auto/Man
20	Infra Spt	Free Agt	Phys Bar	Not Mixed	Dedicated	Auto/Man

Concept Number	Safety Composite	Safety Score	Cost Composite	Cost Score	Thruput Low	Thruput High	Thruput Score
1a	70	35%	8.10	8%	1	2	13%
1b	70	35%	28.30	28%	1	2	13%
2	85	43%	78.60	79%	1	2	13%
3a	129	65%	85.90	86%	2	3	38%
4	87	44%	37.30	37%	2	3	38%
5	87	44%	40.30	40%	3	3	50%
6	92	46%	45.40	45%	2	3	38%
8a	100	50%	61.00	61%	3	3	50%
8b	121	61%	67.00	67%	3	3	50%
9	100	50%	64.00	64%	4	4	75%
10	127	64%	58.30	58%	3	3	50%
11	127	64%	61.30	61%	3	4	63%
12a	135	68%	73.90	74%	3	3	50%
12b	156	78%	79.90	80%	3	3	50%
13	156	78%	82.90	83%	4	5	88%
14	92	46%	48.40	48%	3	4	63%
15	115	58%	46.90	47%	2	2	25%
16	83	42%	42.40	42%	2	2	25%
17	78	39%	37.30	37%	2	3	38%
18	95	48%	46.90	47%	3	3	50%
19	135	68%	67.90	68%	4	4	75%
20	121	61%	61.00	61%	3	3	50%

Concept Number	Flexibility	Flexibility Score	Acceptability	Acceptability Score	Weighted Score	Normalized Acceptability
1a	16.00	77%	0.44	56%	33%	0.00
1b	15.40	79%	0.70	59%	38%	0.11
2	-11.40	46%	0.79	60%	47%	0.30
3a	1.50	65%	0.75	59%	62%	0.64
4	10.10	76%	0.66	58%	48%	0.32
5	7.90	72%	0.70	59%	51%	0.39
6	5.60	68%	0.93	62%	49%	0.36
8a	7.60	72%	0.96	62%	57%	0.54
8b	7.90	73%	0.92	61%	61%	0.63
9	7.90	74%	1.14	64%	65%	0.70
10	8.40	72%	0.94	62%	60%	0.60
11	10.90	77%	0.96	62%	64%	0.69
12a	10.40	77%	0.90	61%	65%	0.71
12b	9.40	74%	0.89	61%	69%	0.78
13	7.90	73%	1.15	64%	78%	1.00
14	4.40	67%	1.03	63%	56%	0.51
15	10.50	77%	0.97	62%	51%	0.39
16	11.40	76%	1.21	65%	46%	0.29
17	11.60	75%	1.07	63%	47%	0.31
18	8.60	75%	0.39	55%	53%	0.44
19	4.90	70%	0.55	57%	68%	0.77
20	3.90	67%	0.41	55%	58%	0.56

Concept Number	Total Score	Merit Score	Normal Merit Score	Cost Score
1a	51%	40%	5%	8%
1b	48%	41%	8%	28%
2	34%	38%	0%	79%
3a	46%	55%	45%	86%
4	53%	50%	32%	37%
5	55%	54%	40%	40%
6	51%	50%	33%	45%
8a	52%	56%	47%	61%
8b	54%	60%	56%	67%
9	58%	65%	68%	64%
10	56%	61%	58%	58%
11	59%	65%	70%	61%
12a	55%	63%	63%	74%
12b	55%	65%	70%	80%
13	64%	77%	100%	83%
14	57%	58%	52%	48%
15	52%	52%	36%	47%
16	50%	47%	25%	42%
17	53%	50%	31%	37%
18	54%	55%	43%	47%
19	60%	68%	77%	68%
20	53%	57%	50%	61%