APPENDIX J

COST SPREADSHEETS

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Baseline Scenario

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
VEHICLE DETECTOR										
Detector Assemblies (CW)	each	$ 1,400 00	-	$ -		$ -		$ -		$ -
Detector Assemblies (RTMS)	each	4,500 00	36	$ 162,000 00	20	$ 90,000 00		$ -		$ -
Detector Mountings	each	500 00	36	$ 18,000.00	20	$ 10,000 00		$ -		$ -
Detector Controller Assemblies	each	7,400 00	36	$ 266,400 00	20	$ 148,000 00		$ -		$ -
Detector Controller Assembly Mountings	each	500 00	36	$ 18,000 00	20	$ 10,000 00		$ -		$ -
Detector Standards (23 ft)	each	1,900 00	36	$ 68,400 00	20	$ 38,000 00		$ -		$ -
Foundation	each	1,100 00	36	$ 39,600 00	20	$ 22,000 00		$ -		$ -
TOTAL				$ 572,400 00		$ 318,000 00		$ -		$ -
CCTV										
Camera Assemblies	each	$ 10,200 00	3	$ 30,600 00	0	$ -		$ -		$ -
Short Haul F O. Video Transmitters	each	2,900 00	3	$ 8,700 00	0	$ -		$ -		$ -
Camera Standards (55 ft)	each	6,200.00	3	$ 18,600 00	0	$ -		$ -		$ -
Drilled Caissons	each	4,600 00	3	$ 13,800 00	0	$ -		$ -		$ -
TOTAL				$ 71,700 00		$ -		$ -		$ -
VVDS										
Camera Assemblies	each	$ 10,299 00	16	$ 164,784 00	10	$ 102,990 00	120	$ 1,235,880 00	30	$ 308,970.00
Short Haul F O. Video Transmitters	each	2,900 00	16	$ 46,400 00	10	$ 29,000 00	120	$ 348,000.00	30	$ 87,000 00
Video Detection Assemblies	each	78,000 00	27	$ 210,600 00	2	$ 132,600 00	120	$ 9,360,000 00	5	$ 390,000.00
Camera Standards (55 ft)	each	6,200 00	16	$ 99,200 00	10	$ 62,000 00	120	$ 744,000 00	30	$ 186,000 00
Drilled Caisson	each	4,600 00	16	$ 73,600 00	10	$ 46,000 00	120	$ 552,000 00	30	$ 138,000 00
TOTAL				$ 594,584 00		$ 372,590 00		$ 12,239,880 00		$ 1,109,970 00
LOOP DETECTORS										
(2 lanes speed traps for each direction)										
Loop Detector (8 loops)	each	$ 2,540 00	0	$ -	0	$ -		$ -		$ -
Loop Detector Lead (8 loops)	each	780 00	0	$ -	0	$ -		$ -		$ -
Loop Detector Sensor	each	400 00	0	$ -	0	$ -		$ -		$ -
Controller 170E	each	15,200 00	0	$ -	0	$ -		$ -		$ -
Field Terminal Cabinet	each	8,400 00	0	$ -	0	$ -		$ -		$ -
Foundation	each	1,100 00	0	$ -	0	$ -		$ -		$ -
TOTAL				$ -		$ -		$ -		$ -

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Baseline Scenario

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
WEATHER STATION ELEMENTS										
RPU with NEMA Enclosure	each	$ 16,000.00	3	$ 48,000 00	2	$ 32,000 00		$ -		$ -
Pavement Sensor	each	4,000.00	6	$ 24,000 00	4	$ 16,000.00		$ -		$ -
Small Tower	each	900 00	2	$ 1,800 00	1	$ 900.00		$ -		$ -
Full Tower (30 ft)	each	2,000.00	1	$ 2,000 00	1	$ 2,000.00		$ -		$ -
WIVIS Sensor (Precipitation class, included)	each	11,000 00	1	$ 11,000 00	1	$ 11,000.00		$ -		$ -
Air Temperature and Relative Humidity Sensor	each	2,500.00	1	$ 2,500 00	1	$ 2,500 00		$ -		$ -
Only Visibility Sensor (better accuracy)	each	11,000.00	0	$ -	0	$ -		$ -		$ -
YES or NO Participation Sensor	each	2,300 00	0	$ -	0	$ -		$ -		$ -
Precipitation Classifier	each	9,000 00	0	$ -	0	$ -		$ -		$ -
Foundation	each	1,100 00	3	$ 3,300 00	2	$ 2,200 00		$ -		$ -
CPU	each	25,000 00	0 012	$ 300 00	0 010	$ 250 00		$ -		$ -
Wind Speed and Direction	each	620 00	1	$ 620 00	1	$ 620 00		$ -		$ -
TOTAL				$ 93,520 00		$ 67,470.00		$ -		$ -
RAMP METERING										
Traffic Signal Assemblies	each	$ 1,750 00	12	$ 21,000.00	0	$ -		$ -		$ -
Traffic Signal Assemblies Foundation	each	770.00	12	$ 9,240 00	0	$ -		$ -		$ -
Ramp Metering Flashing Sign	each	8,200 00	12	$ 98,400 00	0	$ -		$ -		$ -
Ramp Metering Flashing Sign Foundation	each	1,300 00	12	$ 15,600 00	0	$ -		$ -		$ -
Controller 170E	each	11,800 00	6	$ 70,800 00	0	$ -		$ -		$ -
Field Terminal Cabinet	each	8,400 00	6	$ 50,400 00	0	$ -		$ -		$ -
Field Terminal Cabinet Foundation	each	1,100 00	6	$ 6,600 00	0	$ -		$ -		$ -
TOTAL				$ 272,040 00		$ -		$ -		$ -
SIGNALIZED INTERSECTION HARDWARE										
Cabinet, Type P	each	$ 7,000 00	0	$ -	0	$ -	20	$ 140,000.00	5	$ 35,000 00
Interconnect Hardware, Local	each	1,700 00	0	$ -	0	$ -	20	$ 34,000.00	5	$ 8,500.00
Interconnect Hardware, Local Field Master	each	6,500 00	0	$ -	0	$ -	1	$ 6,500 00	1	$ 6,500 00
Interconnect Hardware, Dial-Up Field Master	each	1,800 00	0	$ -	0	$ -	1	$ 1,800 00	1	$ 1,800 00
Interconnect Hardware, Dial-Up Central	each	25,000 00	0	$ -	0	$ -	1	$ 25,000.00	1	$ 25,000 00
Hardware, Field Master	each	500 00	0	$ -	0	$ -	1	$ 500.00	1	$ 500 00
Hardware, Central	each	600 00	0	$ -	0	$ -	1	$ 600 00	1	$ 600 00
TOTAL		$ 43,100 00		$ -		$ -		$ 208,400.00		$ 77,900 00

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Baseline Scenario

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
WEIGH-IN-MOTION										
AVC System (per lane)	each	$ 14,500 00		$ -		$ -		$ -		$ -
Piezo WIM System (per lane)	each	22,600 00		$ -		$ -		$ -		$ -
One Bending Plate WIM System (per lane)	each	28,000 00		$ -		$ -		$ -		$ -
Two Bending Plate WIM System (per lane)	each	33,500 00		$ -		$ -		$ -		$ -
Load Cell WIM System (only equipment, per lane)	each	$ 20,000 00	2	$ 40,000 00	2	$ 40,000 00		$ -		$ -
TOTAL				$ 40,000 00		$ 40,000.00		$ -		$ -
AUTOMATED VEHICLE IDENTIFICATION /LOCATION										
AVI RF based (per lane)	each	$ 20,000 00	12	$ 240,000 00		$ -		$ -		$ -
AVI (Character Recognition) (per lane)	each	30,000 00		$ -		$ -		$ -		$ -
AVI/AVL (per vehicle)	each	10,000 00	0	$ -	0	$ 0 01		$ -		$ -
AVI/AVL Dispatcher Center	each	500,000 00	0 1	$ 50,000 00	0 1	$ 50,000 00		$ -		$ -
AVI/AVL Communications	each	1,400,000 00	0.1	$ 140,000 00	0 1	$ 140,000.00		$ -		$ -
TOTAL				$ 430,000 00		$ 190,000 01		$ -		$ -
CALL BOX										
Call Box with Enclosure	each	$ 700 00	0	$ -	7	$ 4,900 00		$ -	7	$ 4,900 00
Intelli-Voice Location Identifier	each	80 00	0	$ -		$ -		$ -		$ -
Emergency Light/Strobe	each	365 00	0	$ -		$ -		$ -		$ -
Scream-Alert	each	200 00	0	$ -		$ -		$ -		$ -
TOTAL				$ -		$ 4,900 00		$ -		$ 4,900 00
AERIAL SURVEILLANCE										
Multi-Sensor Surveillance Aircraft (MSSA)	each	$ 8,000,000 00	0	$ -	0 02	$ 160,000 00		$ -		$ -
TOTAL						160,000 00				
COMMUNICATION AND POWER SUPPLY										
Communication Conduit, Type C (per foot)	LF	$ 16 70	52800	$ 881,760.00	52800	$ 881,760 00		$ -		$ -
Trunk Cable, Type S, 48 Fibers (per foot)	LF	3 10	52800	$ 163,680 00	52800	$ 163,680 00		$ -		$ -
2" RNMC (per foot)	LF	9 20	3000	$ 27,600 00	3000	$ 27,600 00		$ -		$ -
Termination Cable (per foot)	LF	2 15	4000	$ 8,600 00	4000	$ 8,600 00		$ -		$ -
Power Supply per ITS Unit	each	19,200 00	40	$ 768,000 00	40	$ 768,000 00		$ -		$ -
18"x36" Junction Box	each	1,000 00	40	$ 40,000 00	40	$ 40,000 00		$ -		$ -
38" Round Junction Box	each	1,600 00	20	$ 32,000 00	20	$ 32,000 00		$ -		$ -
TOTAL				$ 1,921,640 00		$ 1,921,640 00		$ -		$ -
FIELD ELEMENTS - UNIT TOTAL COSTS:				$ 3,995,884.00		$ 3,074,600.01		$ 12,448,280.00		$ 1,192,770.00

TRAFFIC MANGEMENT CENTER
EQUIPMENT INSTALLATION COSTS

ELEMENTS	UNIT	UNIT PRICE	QUANTITY	TOTAL
SOFTWARE				
Off-the-Shelf Software	each	$4,000	8	$32,000
Proprietary Software		Included In		
Customized Software		Hardware		
System Analysts	hours	$120	800	$96,000
Senior Programmer	hours	$100	2400	$240,000
Programmer	hours	$60	2400	$144,000
T0TAL SOFTWARE				
COMMUNICATIONS SYSTEM				
MICROWAVE				
23 GHz System, including communication hardware tower near TMC and antenna	each	$100,000	1	$100,000
6 GHz System, including communication hardware tower near TMC and antenna	each	$270,000	1	$270,000
SONET				
Framework	each	$120,000	1	$120.000
Light wave system	each	685,000	1	$85,000
Access System	each	$287,000	1	$287,000
Battery Plant	each	$19,000	1	$19.000
PCMAS Telemetry Material	each	$8,000	1	$8,000
HARDWARE				
WorkstatIons Personal Computers Equipped with P6 CPU, 32 MB RAM, 100 M Bit Network Interface card, 1GB Hard Disk SCSI, 4M VRAM video card, 20" Monltors 600x1289 resolution, Video capture board	each	$9,100	8	$72,800
Server (Video Processing and Central Database Server) Dual RISC processors 275 MHz, 2MB cache/CPU Multi RISC design with 128 bit architect Quad speed CD-ROM, 3.5" FD 5I2MB RAM wit 126 bit memory bus 45 GB RAID hot-swap tower dnve Wide SCS12	each	$114,000	2	$228,000
Server (Fax Sewer and Regional Data Interface BES) Dual P6 processors 64 MB RAM 0 GB Hard Disk SCSI, 6 fax/modem ports	each	$175,000	2	$350.000
Storage System Magneto-optical drives Eraseable/Rewritable 203 GB juke box, SCSI	each	$60,000	1	$60,000

TRAFFIC MANGEMENT CENTER
EQUIPMENT INSTALLATION COSTS

ELEMENTS	UNIT	UNIT PRICE	QUANTITY	TOTAL
Pnnters				
Monochrome Laser pnnters 6 5x11 and 11 xl 7	each	$3,800	2	$7.600
Color Laser pnnter 6 5x11	each	$7,300	1	$7,300
LAN				
25 nodes, 1 hub 100 MBITS, Hybrid cabling	each	$41,500	1	$41,500
MULTIPLEXER				
Multiplexer 3 input channels	each	57,000	42	f294.000
CODEC				
CODEC units	each	$15,000	18	5270,000
Video Switch				
126 Camera input x 16 video output	each	$50,000	1	$50,000
Wall Screen System	each	57,500	16	$120.000
A screen matnx of 4x4 of 37" screens, individually programmable, forming 4 quadrants of 4 screens each Quadrant size approixmately 4"x4" individually addressable				
CCU and DACS	each	$125.000	1	$125.000
TV and VCR				
37" Projectron Screen	each	$4,500	1	$4,500
VCR	each	$500	1	$500
UPS	each	63.500	1	63,500
On-Line uninterruptible power supply for server 1250 VA, 1 hour duration				
Emergency Power Supply	each	$45,000	1	$45,000
110 Volts, 3 phase, 150 KVA, diesel generator transfer smtch, auto start and shut-off				
surge Protectors	each	$4,500	2	$9,000
Surge protectors 15 KVA capacity each				
TOTAL I-95 CORRIDOR - TMC INSTALLATION COSTS:				**$3,089,700**

TRAFFIC MANGEMENT CENTER
TMC OPERATION COST ESTIMATE: OPERATION AND MAINTENANCE

PERSONNEL OPERATION COSTS

		REGULAR SHIFT OPERATIONS			YEARLY OVERTIME OPERATIONS		
PERSONNEL	ANNUAL SALARY	NUMBER OF PERSONNEL		HOURLY RATE	HOURS PER CATEGORY		OVERTIME, HOURLY RATE
Director	$46,000	1		$22.12	0		$33 17
Shift Supervisor/ Manager	$39,000	3		$18.75	288		$28.13
System Operator	$25,000	6		$12.02	576		$18.03
Software Programmer	$38,000	1		$18.27	0		$27.40
Communications Specialist	$38,000	1		$18.27	0		$27.40
Technician Control Center	$30,000	1		$14.42	0		$21 63
Subtotal:		**13**	**$**	**201.44**	**864**	**$**	**18,484.62**
Annual Total, Unloaded:			**$**	**419,000.00**		**$**	**18,484.62**
Benefit Package:	**60%**		**$**	**251,400.00**	**0%**	**$**	**0.00**
Annual Total:							
Annual Total:			**$**	**670,400.00**		**$**	**18,484.62**

Total Personnel Operations Cost for a Year $ 688,884 62

Total Personnel Operations Cost for a Year Based on 24 TMC Sites $ 16,533,230 77

Note:

Overtime Operations are 12 Holidays during the normal work year at 8 hours per person per Holiday.

This table is for a 16 Hour Operation Control Center.

TRAFFIC MANAGEMENT CENTER
TMC OPERATIONS COST ESTIMATE: OPERATIONS AND MAINTENANCE

PHYSICAL PLANT

	UNIT COST	UNIT	QUANTITY	UNIT	YEARLY COST
Monthly Building Operating Costs:					
Rent (Yearly)	$10	SF	1400	SF	$14,000
HVAC and Electric (Daily)	$0.09	KW	342	KW/day	$10,610
Maintenance	$1,000	Month	12	Months	$12,000
General Supplies	$200	Month	12	Months	$2,400
Communications, Telephone General:					
Regular Phone Service	$333	Month	3	Units	$11,988
Cellular Phones	$500	Month	3	Units	$18,000
800 Number Service	$1,000	Month	1	Number	$12,000
Communication, MODEM Links:					
Dial-Up	$20	Drop/Month	15	Locations	$3,600
Leased Lines	$100	Drop/Month	30	Agencies	$36,000
T1-Circuit	$2,500	Line/Month	42	CCTV Locations	$1,260,000
Computers:		INITIAL COST:		$200,000	
Supplies	$605	Month	12	Months	$7,260
Maintenance	10%	Year	1	Year	$20,000
Replacements	10%	Year	1	Year	$20,000
Miscellaneous:					
Monthly Vehicle Costs	$0.50	Mile	2500	Average Miles/Month	$15,000

Total Physical Plan Operations Cost for a Year: **$1,442,858**

Total Physical Cost for a Year Based on **24** **TMC Sites** **$ 34,628,592.54**

TOTAL CORRIDOR TRAFFIC MANAGEMENT CENTER OPERATIONS AND MAINTENANCE COSTS

Physical Plant Costs	**$ 34,628,592.54**
Traffic Management Center Personnel Costs	**$ 16,533,230.77**
TOTAL I-95 CORRIDOR - TMC OPERATIONS AND MAINTENANCE COSTS PER YEAR	**$ 51,161,823.31**

FIELD OPERATION AND MAINTENANCE
FIELD OPERATION COST ESTIMATE: OPERATION AND MAINTENANCE

PERSONNEL

PERSONNEL	HOURLY RATE	REGULAR SHIFT OPERATIONS: NUMBER OF PERSONNEL	SALARY COST	5% OVERTIME OPERATIONS: NUMBER OF PERSONNEL	SALARY COST
Foreman, Field	$17.31	1	$17.31	1	$26
Technician, Field	$13.46	2	$26.92	2	$20
Technician, Electronics, Field	$16.83	2	$33.66	2	$25
SUBTOTAL (HOURLY)			$ 77.89		$ 116 84
		SUBTOTAL YEARLY:	$ 162,011 20		$ 12,150.84
	60%	BENEFIT PACKAGE:	$ 97,206.72		$ -
		SUBTOTALS:	$ 259,217.92		$ 12,150 84
		TOTAL PERSONNEL OPERATION COST FOR A YEAR:	$ *271,368.76*		
		TOTAL PERSONNEL OPERATION COST FOR A YEAR BASED ON:	24	TMC SITES	$ 6,512,850 24

PHYSICAL PLANT

DESCRIPTION	UNIT COSTS	SIZE OR QUANTITY	YEARLY COST		
VEHICLE COST, INITIAL:	PURCHASE	LIFE SPAN YEARLY COST			
HIGH BUCKET, 65'	$55,000	0.175	$ 9,625 00		
BUCKET TRUCK/VAN [2 UNITS]	$35,000	0.175	$ 12,250.00		
EQUIPMENT/SPLICING VAN	$40,000	0.175	$ 7,000.00		
VEHICLE COSTS, MONTH OPERATIONS:	COST PER MILE	MILES PER MONTH			
HIGH BUCKET, 65'	$0.50	600	$ 3,600 00		
BUCKET TRUCK/VAN [2 UNITS]	$0.50	1200	$ 7,200 00		
EQUIPMENT/SPLICING VAN	$0.50	600	$ 3,600 00		
HARDWARE MAINTENANCE/SUPPLIES:	COST PER MONTH	MONTHS			
ALL FIELD EQUIPMENT	$75,000	12	$ 900,000 00		
ELECTRICAL POWER USAGE:	WATTS/UNIT/HOUR:	50			
	COST/KILOWATT	$0.07			
	UNITS/10 MILES	POWER COST/UNIT/DAY	MILEAGE		
URBAN ROADWAYS	253	$0.08	3150	$ 2,443,564 59	
RURAL ROADWAYS	92	$0.08	2444	$ 689,458 90	
		TOTAL PHYSICAL PLANT OPERATIONS COST FOR A YEAR	$ *4,283,712 52*		
		TOTAL PHYSICAL PLANT OPERATIONS COST FOR A YEAR BASED ON	24	TMC SITES	$ 30,749,560 10

AERIAL SURVEILLANCE

DESCRIPTION	UNIT COSTS	SIZE OR QUANTITY	YEARLY COST	
MMSA HOURLY OPERATION AND MAINTENANCE:				
CORRIDOR OWNED AIRCRAFT				[Indicate preferred method - Corridor owned Planes (1) or Leased Planes (2)]
TOTAL AERIAL SURVEILLANCE OPERATION AND MAINTENANCE COST FOR A YEAR BASED ON "X" AIRPLANES - EQUIPT COSTS:				
EQUIPMENT ONLY COST PER HOUR	$250			
HOURS OF OPERATION	12	SINGLE PLANE COST:	$ *1,095,000.00*	
	Number of Planes:	10		1
		TOTAL (YEAR) COST:	$ 10,950,000 00	
LEASED AIRCRAFT				
TOTAL AERIAL SURVEILLANCE OPERATION AND MAINTENANCE COST FOR A YEAR BASED ON "X" AIRPLANES - LEASED COST:				
LEASED COST PER HOUR	$1,000			
HOURS OF OPERATION	12	SINGLE PLANE COST:	$ *4,380,000.00*	
	Number of Planes:	10		
		TOTAL (YEAR) COST:	$ 43,800,000.00	$ 10,950,000 00

TOTAL I-95 CORRIDOR - ROADWAY OPERATION AND MAINTENANCE COST PER YEAR: $ 48,212,410.34

I-95 CORRIDOR - URBAN I RURAL ROADWAYS

SUMMARY OF INSTALLATION COSTS

STATE	AGENCY	ROADWAY SECTIONS	URBAN FREEWAY Miles	RURAL FREEWAY Miles	URBAN ARTERIAL Miles	RURAL ARTERIAL Miles	TMC	TOTAL COSTS
Maine	DOT	I-95	0	195				$ 59,954,700
		I-495	0	60				$ 18,447,600
							1	$ 3,089,700
	TA	I-95	60	45				$ 37,811,004
							1	$ 3,089,700
	TOTALS:		60	300	0	0	2	$ 122,392,704
New Hampshire	DOT	I-95	16	0				$ 6,393,414
		I-93	40	0				$ 15,983,536
		I-89	0	54				$ 16,602,840
		US 1			17	0		$ 21,162,076
		US 3			26	0		$ 32,365,528
							1	$ 3,089,700
	TOTALS:		56	54	43	0	1	$ 95,597,094
Vermont	DOT	I-89	0	54				$ 16,602,840
		I-91	0	71				$ 21,829,660
							1	$ 3,089,700
	TOTALS:		0	125	0	0	1	$ 41,522,200
Massachusetts	MHD	I-95	105	0				$ 41,956,782
		I-495	100	0				$ 39,958,840
		I-93	30	0				$ 11,987,652
		US 3			38	0		$ 47,303,464
		I-395	13	0				$ 5,194,649
		I-84	10	0				$ 3,995,884
		I-91	10	40				$ 16,294,284
		I-195	42	0				$ 16,782,713
	MTA	I-90	87	43				$ 47,984,971
							1	$ 3,089,700
	TOTALS:		397	83	38	0	1	$ 234,548,939
Rhode Island	DOT	I-95	42	0				$ 16,782,713
		I-295	21	0				$ 8,391,356
							1	$ 3,089,700
	TOTALS:		63	0	0	0	1	$ 28,263,769
Connecticut	DOT	I-95	121	0				$ 48,350,196
		I-395	54	0				$ 21,577,774
		I-91	65	0				$ 25,973,246
		I-84	92	0				$ 36,762,133
		Merritt Parkway	70	0				$ 27,971,188
							1	$ 3,089,700
	TOTALS:		402	0	0	0	1	$ 163,724,237
New York	NYSDOT	I-684	27	0				$ 10,788,887
		I-90 (Albany)	0	22				$ 6,764,120
							1	$ 3,089,700
	NYSTA	I-287	11	0				$ 4,395,472
		I-87/287	16	0				$ 6,393,414
		I-87	11	118				$ 40,675,753
		I-84	36	36				$ 25,453,742
		I-95	15	0				$ 5,993,826
		I-90	0	24				$ 7,379,040
							1	$ 3,089,700
	NYCDOT	I-278	31	0				$ 12,387,240
		I-95	8	0				$ 3,196,707
		I-495	67	0				$ 26,772,423
		I-678	12	0				$ 4,795,061
		I-87	8	0				$ 3,196,707
							1	$ 3,089,700
	TOTALS:		242	200	0	0	3	$ 167,461,493

I-95 CORRIDOR - URBAN / RURAL ROADWAYS

SUMMARY OF INSTALLATION COSTS

STATE	AGENCY	ROADWAY SECTIONS	URBAN FREEWAY Miles	RURAL FREEWAY Miles	URBAN ARTERIAL Miles	RURAL ARTERIAL Miles	TMC	TOTAL COSTS
New Jersey	NJDOT	I-80	30	38				$ 23,671,132
		I-287	62	0				$ 24,774,481
		I-280	17	0				$ 6,793,003
		I-78	30	29				$ 20,903,992
		I-278	2	0				$ 799,177
		I-195	35	0				$ 13,985,594
		I-95/295	16	0				$ 6,393,414
		I-295	60	0				$ 23,975,304
		I-676	2	0				$ 799,177
		US RT 1	0	0	112	0	0	$ 139,420,736
							1	$ 3,089,700
	NJHA	Garden State Parkway	73	100				$ 59,915,953
							1	$ 3,089,700
	NJTA	New Jersey Turnpike						
		I-95	54	68				$ 42,485,054
							1	$ 3,089,700
	TOTALS:		381	235	112	0	3	$ 373,186,117
Pennsylvania	DOT	I-95	52	0				$ 20,778,597
		I-476	22	0				$ 8,790,945
		I-676	2	0				$ 799,177
		I-380	0	33				$ 10,146,180
		I-81	0	175				$ 53,805,500
		I-80	0	50				$ 15,373,000
		I-84	0	50				$ 15,373,000
		I-83	20	19				$ 13,833,508
		I-70	0	24				$ 7,379,040
		I-78/378	0	88				$ 27,056,480
							1	$ 3,089,700
	PTC	I-76/276	125	80				$ 74,545,350
		NE-Extension	38	72				$ 37,321,479
		I-76	0	1				$ 307,460
		I-76	0	1				$ 307,460
		NE-Extension	0	1				$ 307,460
							1	$ 3,089,700
	TOTALS:		259	594	0	0	2	$ 292,304,036
Delaware	DOT	I-495	12	0				$ 4,795,061
		RT 13	41	51				$ 32,063,584
							1	$ 3,089,700
	DTA	I-95	30	0				$ 11,987,652
							1	$ 3,089,700
	TOTALS:		83	51	0	0	2	$ 55,025,697
Maryland	MDSHA	I-95	37	0				$ 14,784,771
	MDDOT	I-695	41	0				$ 16,383,124
		I-83	30	0				$ 11,987,652
		I-70	55	45				$ 35,813,062
		I-195	3	0				$ 1,198,765
		I-97	17	0				$ 6,793,003
		MD-295	33	0				$ 13,186,417
		I-495	40	0				$ 15,983,536
		MD-97	12	0				$ 4,795,061
		I-270	45	0				$ 17,981,478
		I-81	0	37				$ 11,376,020
		US 50	27	0				$ 10,788,887
		US 50/301	20	37				$ 19,367,788
		US 301	15	24				$ 13,372,866
							1	$ 3,089,700
	MDTA	I-95	24	36				$ 20,658,682
		I-895	18	0				$ 7,192,591
		I-395	2	0				$ 799,177
		I-695	9	0				$ 3,596,296
							1	$ 3,089,700
	TOTALS:		428	179	0	0	2	$ 232,238,575

I-95 CORRIDOR - URBAN / RURAL ROADWAYS

SUMMARY OF INSTALLATION COSTS

STATE	AGENCY	ROADWAY SECTIONS	URBAN FREEWAY Miles	RURAL FREEWAY Miles	URBAN ARTERIAL Miles	RURAL ARTERIAL Miles	TMC	TOTAL COSTS
Washington DC	DPW	I-295	9	0				$ 3,596,296
		US 50	2	0				$ 799,177
		I-395	4	0				$ 1,598,354
							1	$ 3,089,700
	TOTALS:		15	0	0	0	1	$ 9,083,526
Virginia	DOT	I-495	22	0				$ 8,790,945
		I-395	10	0				$ 3,995,884
		I-66	45	25				$ 25,667,978
		I-81	0	310				$ 95,312,600
		I-95/US 301	130	0				$ 51,946,492
		US 301	37	53				$ 31,080,151
		US 360	21	57				$ 25,916,576
		US 360	27	13				$ 14,785,867
		I-295	24	0				$ 9,590,122
		I-195	7	0				$ 2,797,119
		I-64	70	0				$ 27,971,188
		I-64	28	50				$ 26,561,475
		US 60	34	0				$ 13,586,006
		US 460	0	24				$ 7,379,040
		US 460	0	0				$ -
		I-85	54	0				$ 21,577,774
		US 58	0	27				$ 8,301,420
		US 58	0	64				$ 19,677,440
							1	$ 3,089,700
	TOTALS:		509	623	0	0	1	$ 398,027,776
NY and NJ Tunnels and Bridges	THRUWAY	Tappan Zee	3	0				$ 1,198,765
	TBTA	Triborough	2	0				$ 799,177
		Throgs Neck	3	0				$ 1,198,765
		Bronx-Whitest	2	0				$ 799,177
		Verrazano Narrows	2	0				$ 799,177
		Brooklyn Battery	3	0				$ 1,198,765
		Queens Midtown	2	0				$ 799,177
	PANYNJ	Lincoln Tunnel	2	0				$ 799,177
		Holland Tunnel	2	0				$ 799,177
		George Wash. Bridge	2	0				$ 799,177
		Goethals	1	0				$ 399,588
		Outerbridge	2	0				$ 799,177
		Bayonne	2	0				$ 799,177
	NYCDOT	Manhattan	2	0				$ 799,177
		Williamsburg	2	0				$ 799,177
		Brooklyn	2	0				$ 799,177
							1	$ 3,089,700
	TOTALS:		34	0	0	0	1	$ 16,675,706
Delaware Bay and River Authority	Deleware Memorial		3	0				$ 1,198,765
	Ferry		15	0				$ 5,993,826
							1	$ 3,089,700
Delaware River Port Authority	Betsy Ross		3	0				$ 1,198,765
	Ben Franklin		2	0				$ 799,177
	Walt Whitman		2	0				$ 799,177
	Commander Barry		3	0				$ 1,198,765
							1	$ 3,089,700
	TOTALS:		28	0	0	0	2	$ 17,367,875
	GRAND TOTALS		2957	2444	193	0	24	$ 2,247,419,745

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Scenario 1: Same as Baseline but with full use of CCTV and AVI systems

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
VEHICLE DETECTOR										
Detector Assemblies (CW)	each	$ 1,400 00	-	$ -		$ -		$ -		$ -
Detector Assemblies (RTMS)	each	4,500.00	36	$ 162,000 00	20	$ 90,000.00		$ -		$ -
Detector Mountings	each	500 00	36	$ 18,000 00	20	$ 10,000 00		$ -		$ -
Detector Controller Assemblies	each	7,400 00	36	$ 266,400 00	20	$ 148,000.00		$ -		$ -
Detector Controller Assembly Mountings	each	500 00	36	$ 18,000.00	20	$ 10,000.00		$ -		$ -
Detector Standards (23 ft)	each	1,900 00	36	$ 68,400.00	20	$ 38,000 00		$ -		$ -
Foundation	each	1,100 00	36	$ 39,600 00	20	$ 22,000 00		$ -		$ -
TOTAL				$ 572,400.00		$ 318,000 00		$ -		$ -
CCTV										
Camera Assemblies	each	$ 10,200 00	5	$ 51,000 00	0	$ -		$ -		$ -
Short Haul F O. Video Transmitters	each	2,900 00	5	$ 14,500.00	0	$ -		$ -		$ -
Camera Standards (55 ft)	each	6,200.00	5	$ 31,000 00	0	$ -		$ -		$ -
Drilled Caissons	each	4,600 00	5	$ 23,000 00	0	$ -		$ -		$ -
TOTAL				$ 119,500 00		$ -		$ -		$ -
VVDS										
Camera Assemblies	each	$ 10,299 00	16	$ 164,784 00	10	$ 102,990 00	120	$ 1,235,880 00	30	$ 308,970.00
Short Haul F O. Video Transmitters	each	2,900.00	16	$ 46,400 00	10	$ 29,000 00	120	$ 348,000 00	30	$ 87,000 00
Video Detection Assemblies	each	78,000 00	2.7	$ 210,600.00	2	$ 132,600.00	120	$ 9,360,000 00	5	$ 390,000.00
Camera Standards (55 ft)	each	6,200 00	16	$ 99,200 00	10	$ 62,000.00	120	$ 744,000.00	30	$ 186,000.00
Drilled Caisson	each	4,600 00	16	$ 73,600 00	10	$ 46,000 00	120	$ 552,000.00	30	$ 138,000.00
TOTAL				$ 594,584 00		$ 372,590 00		$ 12,239,880.00		$ 1,109,970 00
LOOP DETECTORS										
(2 lanes speed traps for each direction)										
Loop Detector (8 loops)	each	$ 2,540 00	0	$ -	0	$ -		$ -		$ -
Loop Detector Lead (8 loops)	each	780 00	0	$ -	0	$ -		$ -		$ -
Loop Detector Sensor	each	400 00	0	$ -	0	$ -		$ -		$ -
Controller 170E	each	15,200 00	0	$ -	0	$ -		$ -		$ -
Field Terminal Cabinet	each	8,400 00	0	$ -	0	$ -		$ -		$ -
Foundation	each	1,100 00	0	$ -	0	$ -		$ -		$ -
TOTAL				$ -		$ -		$ -		$ -

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Scenario 1: Same as Baseline but with full use of CCTV and AVI systems

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
WEATHER STATION ELEMENTS										
RPU with NEMA Enclosure	each	$ 16,000 00	3	$ 48,000 00	2	$ 32,000 00		$ -		$ -
Pavement Sensor	each	4,000 00	6	$ 24,000 00	4	$ 16,000 00		$ -		$ -
Small Tower	each	900 00	2	$ 1,800 00	1	$ 900 00		$ -		$ -
Full Tower (30 ft)	each	2,000 00	1	$ 2,000 00	1	$ 2,000.00		$ -		$ -
WIVIS Sensor (Precipitation class, included)	each	11,000 00	1	$ 11,000 00	1	$ 11,000 00		$ -		$ -
Air Temperature and Relative Humidity Sensor	each	2,500 00	1	$ 2,500 00	1	$ 2,500.00		$ -		$ -
Only Visibility Sensor (better accuracy)	each	11,000 00	0	$ -	0	$ -		$ -		$ -
YES or NO Participation Sensor	each	2,300 00	0	$ -	0	$ -		$ -		$ -
Precipitation Classifier	each	9,000 00	0	$ -	0	$ -		$ -		$ -
Foundation	each	1,100 00	0	$ -	2	$ 2,200.00		$ -		$ -
CPU	each	25,000 00	0 012	$ 300 00	0 010	$ 250 00		$ -		$ -
Wind Speed and Direction	each	620 00	1	$ 620 00	1	$ 620.00		$ -		$ -
TOTAL				$ 90,220 00		$ 67,470 00		$ -		$ -
RAMP METERING										
Traffic Signal Assemblies	each	$ 1,750 00	12	$ 21,000 00	0	$ -		$ -		$ -
Traffic Signal Assemblies Foundation	each	770 00	12	$ 9,240 00	0	$ -		$ -		$ -
Ramp Metering Flashing Sign	each	8,200 00	12	$ 98,400 00	0	$ -		$ -		$ -
Ramp Metering Flashing Sign Foundation	each	1,300 00	12	$ 15,600.00	0	$ -		$ -		$ -
Controller 170E	each	11,800 00	6	$ 70,800 00	0	$ -		$ -		$ -
Field Terminal Cabinet	each	8,400 00	6	$ 50,400 00	0	$ -		$ -		$ -
Field Terminal Cabinet Foundation	each	1,100.00	6	$ 6,600 00	0	$ -		$ -		$ -
TOTAL				$ 272,040 00		$ -		$ -		$ -
SIGNALIZED INTERSECTION HARDWARE										
Cabinet, Type P	each	$ 7,000 00	0	$ -	0	$ -	20	$ 140,000 00	5	$ 35,000.00
Interconnect Hardware, Local	each	1,700 00	0	$ -	0	$ -	20	$ 34,000 00	5	$ 8,500.00
Interconnect Hardware, Local Field Master	each	6,500 00	0	$ -	0	$ -	1	$ 6,500 00	1	$ 6,500.00
Interconnect Hardware, Dial-Up Field Master	each	1,800 00	0	$ -	0	$ -	1	$ 1,800 00	1	$ 1,800 00
Interconnect Hardware, Dial-Up Central	each	25,000 00	0	$ -	0	$ -	1	$ 25,000 00	1	$ 25,000 00
Hardware, Field Master	each	500 00	0	$ -	0	$ -	1	$ 500 00	1	$ 500 00
Hardware, Central	each	600 00	0	$ -	0	$ -	1	$ 600 00	1	$ 600 00
TOTAL		$ 43,100 00		$ -		$ -		$ 208,400 00		$ 77,900 00

I-95 CORRIDOR - FIELD ELEMENTS UNIT COST ESTIMATE

FIELD HARDWARE AND INSTALLATION UNIT COSTS FOR DETECTION AND SURVEILLANCE ELEMENTS

Scenario 1: Same as Baseline but with full use of CCTV and AVI systems

SURVEILLANCE ELEMENTS	UNITS	UNIT PRICE	URBAN FREEWAY NUMBER OF UNITS	URBAN FREEWAY TOTAL UNIT COST	RURAL FREEWAY NUMBER OF UNITS	RURAL FREEWAY TOTAL UNIT COST	URBAN ARTERIAL NUMBER OF UNITS	URBAN ARTERIAL TOTAL UNIT COST	RURAL ARTERIAL NUMBER OF UNITS	RURAL ARTERIAL TOTAL UNIT COST
WEIGH-IN-MOTION										
AVC System (per lane)	each	$ 14,500 00	4	$ 58,000 00		$ -		$ -		$ -
Piezo WIM System (per lane)	each	22,600 00		$ -		$ -		$ -		$ -
One Bending Plate WIM System (per lane)	each	28,000 00		$ -		$ -		$ -		$ -
Two Bending Plate WIM System (per lane)	each	33,500.00		$ -		$ -		$ -		$ -
Load Cell WIM System (only equipment, per lane)	each	$ 20,000 00	4	$ 80,000.00	2	$ 40,000 00		$ -		$ -
TOTAL				$ 138,000 00		$ 40,000.00		$ -		$ -
AUTOMATED VEHICLE IDENTIFICATION LOCATION										
AVI RF based (per lane)	each	$ 20,000 00	26	$ 520,000 00		$ -		$ -		$ -
AVI (Character Recognition) (per lane)	each	30,000.00		$ -		$ -		$ -		$ -
AVI/AVL (per vehicle)	each	10,000 00	0	$ -	0	$ 0 01		$ -		$ -
AVI/AVL Dispatcher Center	each	500,000.00	0 1	$ 50,000 00	0 1	$ 50,000.00		$ -		$ -
AVI/AVL Communications	each	1,400,000 00	0 1	$ 140,000 00	0 1	$ 140,000 00		$ -		$ -
TOTAL				$ 710,000 00		$ 190,000.01		$ -		$ -
CALL BOX										
Call Box with Enclosure	each	$ 700.00	0	$ -	7	$ 4,900 00		$ -	7	$ 4,900 00
Inteli-Voice Location Identifier	each	80 00	0	$ -		$ -		$ -		$ -
Emergency Light/Strobe	each	365.00	0	$ -		$ -		$ -		$ -
Scream-Alert	each	200 00	0	$ -		$ -		$ -		$ -
TOTAL				$ -		$ 4,900.00		$ -		$ 4,900.00
AERIAL SURVEILLANCE										
Multi-Sensor Surveillance Aircraft (MSSA)	each	$ 8,000,000 00	0	$ -	0 02	$ 160,000 00		$ -		$ -
TOTAL						160,000.00				
COMMUNICATION AND POWER SUPPLY										
Communication Conduit, Type C (per foot)	LF	$ 16 70	52800	$ 881,760.00	52800	$ 881,760.00		$ -		$ -
Trunk Cable, Type S, 48 Fibers (per foot)	LF	3 10	52800	$ 163,680 00	52800	$ 163,680 00		$ -		$ -
2" RNMC (per foot)	LF	9 20	3000	$ 27,600 00	3000	$ 27,600 00		$ -		$ -
Termination Cable (per foot)	LF	2 15	4000	$ 8,600 00	4000	$ 8,600 00		$ -		$ -
Power Supply per ITS Unit	each	19,200 00	40	$ 768,000 00	40	$ 768,000 00		$ -		$ -
18"x36" Junction Box	each	1,000 00	40	$ 40,000 00	40	$ 40,000 00		$ -		$ -
38" Round Junction Box	each	1,600 00	20	$ 32,000 00	20	$ 32,000 00		$ -		$ -
TOTAL				$ 1,921,640 00		$ 1,921,640 00		$ -		$ -
FIELD ELEMENTS - UNIT TOTAL COSTS:				**$ 4,418,384.00**		**$ 3,074,600.01**		**$ 12,448,280.00**		**$ 1,192,770.00**