Research Report
KTC-91-10

EVALUATION OF HEADWALLS AND OUTLETS FOR GEOCOMPOSITE EDGE DRAINS ON I-75 AND I-71

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EXECUTIVE SUMMARY

Longitudinal, round, perforated pipe edge drains have been used along Kentucky roadways for approximately two decades. Panel (fin) edge drains were first used in Kentucky in 1984. Most of these edge drains were installed on the Interstate and Parkway systems.

Several problems related to the drains have been noted in the last seven years. A number of these problems have been observed to be related to flexible outlet pipes and headwalls.

A recent study was initiated to evaluate headwalls and outlets on I-75 from Lexington, Kentucky to Cincinnati, Ohio (approximately 70 miles) and on I-71 from Louisville, Kentucky to I-75 in Northern Kentucky (approximately 68 miles). This study was initiated as a first phase of a much more intensive study which will evaluate all edge drains and outlets on Interstates and Parkways in Kentucky.

This report documents findings of the investigation of 234 edge drain outlets. Of the 234 outlets investigated, approximately 43 percent of the edge drain outlets inspected were out of service. Approximately 50 percent of the outlet pipes had been damaged during installation. More significant problems were found at the headwall and outlet pipe connection than any other location in the drainage system.

It appears that a maintenance program should be established to clean the troughs of the headwalls and to check the screens for clogging and rust. The metal screens should be replaced with galvanized screens.

Positive flow should also be maintained from the headwalls. The buildup of grass and silt can eventually detour some of the flow. Headwalls located in cuts are more prone to become covered or ponded.

Edge drains and outlets should be inspected after they are installed.

Rigid outlet pipe should be precast into the headwalls. This should help eliminate problems occurring at the headwall connection. Currently, a rigid outlet pipe is connected to an approximately 2-foot long "pigtail" (4-inch flexible pipe) which is precast into the headwall.

Introduction

Longitudinal, round, perforated pipe edge drains have been used along Kentucky roadways for approximately two decades. Panel (fin) edge drains were first used in Kentucky in 1984. Most of these edge drains were installed on the Interstate and Parkway systems.

Several problems related to the drains have been noted in the last seven years. Several of these problems have apparently lead to premature pavement failures. These problems include panel drains being damaged during construction due to installation techniques and vertical flexibility of the panel core. Problems were also noted at edge drain outlets where they were not constructed to grade, and in addition, were partially crushed. The metal screens over the mouth of the outlet pipes in the headwalls permitted platelets of calcium carbonate (these form on the surface of the water in the edge drains and break up during heavy flow) to become lodged behind the screen decreasing flow and increasing siltation. Metal screens also rusted and disintegrated allowing animals to enter and build nests in the outlet pipes. Several guardrail posts were driven through outlets on one rehabilitation project. Several stained areas appeared on pavement surfaces throughout the state on rehabilitation projects where the old rigid pavement had been broken, seated, and overlaid. Calcium fines were being forced to the surface through the asphaltic concrete overlay. The drains were apparently being overcharged during heavy rains due to the distance between headwalls. Problems have

also been noted at median boxes where the edge drain outlet pipes were placed at the bottom of the box and eventually became buried by the accumulation of material in the bottom of the box. Separations have also been discovered between the mainline and the outlet pipe.

In the past seven years, several changes have been made in Kentucky design and installation procedures for highway edge drains. Kentucky currently specifies a four-inch trench for panel drains and a sand slurry backfill. The edge drains are also placed on the shoulder side of the trench. This permits the sand backfill to act as an additional filter medium to reduce blinding of the fabric and allows for another means for the water to travel if there is an installation problem with the panel. To date, no blinding has been observed at the sand - concrete interface.

Kentucky currently specifies a smooth-lined rigid outlet pipe which should decrease damage to outlets during installation, provide for smoother flow, and reduce siltation.

Edge drain outlets are no longer placed at the bottom of median boxes. The outlets are placed at a sufficient elevation to permit sedimentation in the bottom of the box, but still permit proper grade from the edge drain. In addition, headwalls are also used in the medians.

Edge drain headwall spacings are now specified. For a slope greater than two percent, the headwalls are spaced at 500-foot intervals; for slopes less than two percent, the headwalls are spaced at 250-foot intervals. Outlet pipes a now installed 90 degrees to the shoulder in order that they may easily be located during rehabilitation of guardrail sections.

Kentucky now specifies a larger mesh opening and galvanized coated rodent screens. This will decrease the buildup of calcium carbonate platelets that tend to collect behind the screen.

Visual Inspection of Headwalls and Outlets on Interstate 75 and Interstate 71

Due to the number of outlet problems noted in the last seven years, a study was initiated to evaluate headwalls and outlets on I-75 from Lexington to Cincinnati (approximately 70 miles) and on I-71 from Louisville to I-75 (approximately 68 miles). This study was initiated as a first phase of a more intensive study which will evaluate all edge drains and outlets on Interstates and Parkways in Kentucky. Two inspection sheets were developed for the study in order that various features and distresses could be quickly noted (Appendix A). A computer program was written for entering the field data and to provide a statistical data base. A two-man crew conducted the inspections. Inspection equipment included a Cues Mini Camera with 300 feet of push cable, a VCR, input mike for comments, and two voice-activated, two-way radio's for communication.

Due to the time and budget constraints, only a portion of the headwalls could be evaluated on each of the routes. It was decided that one headwall and one outlet per mile would provide sufficient data for an analysis.

Edge Drain Headwall and Outlet Pipe Condition Survey on I-75 and I-71

Debris Accumulation in Headwalls

A total of 122 headwalls and outlets were inspected on I-75. Of the 122 headwalls inspected, 35 percent were clean (no debris in the trough of the headwall), 41 percent were partially covered (outlet was partially visible), nine percent were covered (outlet pipe not visible), and 15 percent were plugged (outlet pipe was completely filled with debris). A total of 127 headwalls and outlets were inspected on Interstate 71. Of the 127 headwalls, 43 percent were clean,

30 percent were partially covered, five percent were covered, and 22 percent were plugged. Averages for I-75 and I-71 were: 39 percent were open, 36 percent were partially covered, seven percent were covered, and 18 percent were plugged. Statistical information on the headwall conditions is contained in Table 1 (A detailed statistical summary and the field data base is contained in Appendix B for I-75, and in Appendix C for I-71).

Table 1. Statistical Data on Headwall Condition

LOCATION->	I-75	I-71	I-71 AND I-75 (AVG.)
% CLEAN	34.7	42.5	38.5
% PARTIALLY COVERED	41.3	30.1	35.9
% COVERED	9.1	5.3	7.2
% PLUGGED	14.9	22.1	18.4

Condition of Rodent Screens

The rodent screens were visually inspected for signs of clogging and rusting. Averages for I-71 and I-75 were: 28 percent of the headwalls did not have screens; 42 percent of the screens were open, 15 percent were partially blocked, 15 percent were blocked, and 34 percent were severely rusted (Table 2). The galvanized screens now specified should aid in preventing corrosion.

Table 2. Screen Condition

LOCATION-->	I-75	I-71	I-71 AND I-75 (AVG.)
% MISSING	30.8	24.8	27.9
% OPEN	35.8	46.8	41.1
% PARTIALLY OPEN	16.7	14.2	15.5
% BLOCK	16.7	14.2	15.5
% SEVERELY RUSTED	35.0	33.0	34.3

Signs of Siltation

The headwalls were inspected for signs of siltation. It was difficult to quantify siltation since only 39 percent of the headwalls were free of gravel, grass, and soil that accumulated in many headwalls. Most of the drains and headwalls were relatively free of silt. There was some buildup of calcium carbonate in the corrugations which would break loose and become logged behind the screen. Table 3 indicates 83 percent of the headwalls had no signs of siltation. A significant amount of silt was observed inside the outlet pipes between milepost 145 and milepost 151.39 on Interstate 75. Further inspection should be conducted in this area to observe the condition of the filter fabric.

Table 3. Siltation at Headwall

LOCATION->	I-75	I-71	I-71 AND I-75 (AVG.)
% NONE	85.0	81.4	83.2
% SLIGHT	6.0	11.5	8.8
% MODERATE	4.0	4.4	4.2
% SEVERE	5.0	3.8	3.8

Signs of Flow and Positive Drainage

Each outlet was inspected for signs of flow and to determine if positive drainage had been provided. On the average for both routes, 89 percent of the headwalls showed flow and 74 percent of the headwalls had been provided with a proper grade to drain water away from the headwalls. Approximately 27 percent of the outlets on I-75 were not properly drained (Table 4).

Table 4. Summary of Headwalls that were Flowing and Those with Positive Drainage.

LOCATION	I-75	I-71	I-75 AND I-71 (AVG.)
INDICATIONS OF FLOW %	84.0	94.7	89.2
POSITIVE DRAINAGE FROM HEADWALL %	63.0	85.0	74.0

Condition of Outlet Pipes

A total of 249 outlet pipes were inspected on I-71 and I-75. The pipes were inspected for sags, siltation, standing water, compression, rips, and other noticeable distress. Approximately 35 percent of the outlet pipes that were inspected were fully open, 16 percent were 60 to 80 percent open, 14 percent were 40 to 60 percent open, and 35 percent were less than 40 percent open (Table 5). Approximately 50 percent of the outlet pipes had failed in compression.

Table 5. Outlet Pipe Flow Information

LOCATION->	I-75	I-71	I-75 & I-71 (AVG.)
(%) OPEN	25.6	46.0	36.5
60%-90% OPEN	29.8	1.8	16.2
40%-60% OPEN	8.3	19.5	13.7
LESS THAN 40% OPEN	36.3	13.7	34.6

In Table 6, the distress information is broken down into percentages for each of the assigned outlet pipe sections as shown in Figure 1. Table 6 indicates that for I-75 there were more significant problems at A than B, E, or F. More significant problems occurred on I-71 at B than A, E, or F. It appears that more significant problems have occurred at location A which is located on the backside of the headwall. It also appears that pipes are better backfilled in the mainline than for the outlet pipes.

Figure 1. Assigned Outlet Pipe Sections

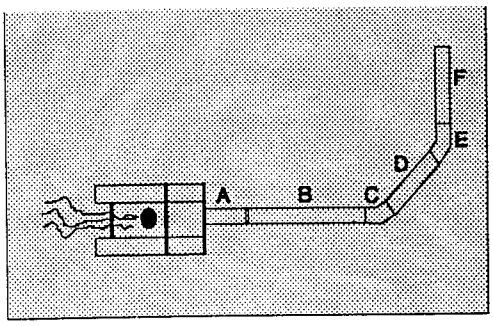


Table 6. Outlet Pipe Distress Information

LOCATION	SAG (%)	COMPRESSED PIPE AND/OR COUPLING %	RIP, SEPARATION AT COUPLING AND/OR BACKFILL IN THE PIPE %
I-75			
A	55.30	45.40	24.00
B	57.80	24.80	12.30
E	26.40	3.30	0.00
F	24.00	1.60	0.00
I-71			
A	47.00	23.00	6.20
B	40.60	32.70	7.10
E	8.00	0.90	0.00
F	3.60	1.80	0.00
I-75 AND I-71			
A	55.15	34.20	15.10
B	49.20	28.75	9.70
E	17.20	2.10	0.00
F	13.80	1.70	0.00

* Pipe Sections C and D are only applicable to rigid outlet pipe installations. Rigid outlet pipes were not included in this inspection.

Headwall and Outlet Condition

Table 7 indicates the working condition of each headwall and its associated outlet pipe. The outlet was considered fully in service if the headwall was clean and the outlet pipe was greater than 60 percent open. The outlet was considered partially open if the headwall was partially covered and/or the outlet was 40 percent to 60 percent open. The outlet was considered out of service if the headwall was plugged and/or if the outlet pipe was less than 40 percent open.

On the average for both routes, 43 percent of the outlets were out of service, and 22 percent of the outlets were fully in service with the remainder being partially in service (Table 7).

Table 7. Headwall and Outlet Condition

LOCATION-->	I-75	I-71	I-75 AND I-71 (AVG.)
FULLY IN SERVICE	19.80	25.60	22.70
PARTIALLY IN SERVICE	37.20	31.00	34.10
OUT OF SERVICE	43.00	43.40	43.20

Conclusions

Approximately 43 percent of the edge drain outlets inspected were out of service. Approximately 50 percent of the outlet pipes had been damaged during installation. More significant problems were found at the headwall and outlet pipe connection than any other location in the drainage system.

It appears that a maintenance program should be established to clean the troughs of the headwalls and to check the screens for clogging and rust. The metal screens should be replaced with galvanized screens.

Positive flow should also be maintained from the headwalls. The buildup of grass and silt can eventually detour some of the flow. Headwalls located in cuts are more prone to become covered or ponded.

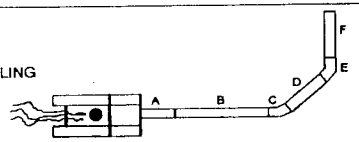
Edge drains and outlets should be inspected after they are installed.

Rigid outlet pipe should be precast into the headwalls. This should help eliminate problems occurring at the headwall connection. Currently, a rigid outlet pipe is connected to an approximately 2-foot long "pigtail" (4-inch flexible pipe) which is precast into the headwall.

APPENDIX A
FIELD DATA SHEETS

ROUTE	MILEPOST	DIRECTION.	LOCATION & OUTLET TYPE 1. S-H 2. S-B 3. M-H 4. M-B	OUTLET 1. CLEAN 2. PT. COVER. 3. COVER. 4. PLUGGED	COVER MATER. 1. GRAV. 2. DIRT. 3. VEG. 4. CON.	SCREEN 1. NONE 2. OPEN 3. PT. OPEN 4. BLOCK	SILT. 1. NONE 2. SLIGHT 3. MOD. 4. SEV.	FLOW 1. YES 2. NO	DRAINAGE 1. GOOD 2. POOR	SURFACE DISTRESS 1. POT HOLE STAINING 2. OUT 3. INSIDE 4. CL 5. CON. JT. 6. SHOULD.	NOTES	FILM ROLL# & PHOTO#

1. SAG
2. SAG W/ STANDING WATER
3. SAG W/ SILTATION
4. COMPRESSED COUPLING
5. COMPRESSED PIPE
6. BACKFILL IN PIPE
7. SEPARATION AT COUPLING
8. RIP IN PIPE
9. COMPRESSED PANEL
10. COMPRESSED AND SILTED



ROUTE	MILEPOST	DIRECTION	OUTLET PIPE 1. FLEX. 2. RIGID	A	B	C	D	E	F	COMMENTS	VIDEO TAPE

APPENDIX B
SUMMARY OF I-75

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-75
DIRECTION = SOUTH+NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	42	34.70
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	24	19.80
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	3	2.50
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	15	12.40
2. PT. COVERED HEADWALL	50	41.30
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	30	24.80
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	5	4.10
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	15	12.40
3. COVERED HEADWALL	11	9.10
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	6	5.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	0.80
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	4	3.30
4. PLUGGED HEADWALL	18	14.90
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	7	5.80
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	0.80
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	10	8.30
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	121	
* FULLY IN SERVICE	24	19.80
* PT. IN SERVICE	45	37.20
* OUT OF SERVICE	52	43.00

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe 40%-60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-75
DIRECTION = SOUTH+NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	121	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	42	34.70
PT. COVERED HEADWALL	50	41.30
COVERED HEADWALL	11	9.10
PLUGGED HEADWALL	18	14.90
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	40	33.10
DIRT. OR DIRT.+.....	45	37.20
VEG. OR VEG. + ...	49	40.50
CON. OR CON. + ...	1	0.80
4. SCREEN :		
NONE	37	30.60
OPEN	43	35.50
PARTIALLY OPEN	20	16.50
BLOCK	20	16.50
RUSTED SCREEN	42	34.70
5. SILTATION :		
NONE	102	84.30
SLIGHTLY	7	5.70
MODERATELY	6	5.00
SEVERLY	6	5.00
6. FLOW :		
YES	102	84.30
NO	19	15.70
7. DRAINAGE :		
GOOD	76	62.80
POOR	45	37.20

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-75
DIRECTION = SOUTH+NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	121	
II. OPEN OUTLET PIPE (>80% OPEN	31	25.60
III. COMPRESSED/BLOCKED OUTLET PIPE	90	74.40
* 60% - 80% OPEN	36	29.80
* 40% - 60% OPEN	10	8.30
* < 40 % OPEN OR BLOCKED	44	36.30
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	96	79.30
1. SAG	19	15.70
2. SAG W/ STANDING WATER	32	26.40
3. SAG W/ SILTATION	16	13.20
4. COMPRESSED COUPLING	30	24.80
5. COMPRESSED PIPE	25	20.70
6. BACKFILL IN PIPE	18	14.90
7. SEPARATION AT COUPLING	4	3.30
8. RIP IN PIPE	7	5.80
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	83	68.60
1. SAG	5	4.10
2. SAG W/ STANDING WATER	42	37.20
3. SAG W/ SILTATION	20	16.50
4. COMPRESSED COUPLING	1	0.80
5. COMPRESSED PIPE	29	24.00
6. BACKFILL IN PIPE	9	7.40
7. SEPARATION AT COUPLING	1	0.80
8. RIP IN PIPE	5	4.10
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLET PIPE WITH PROBLEM AT E :	32	26.40
1. SAG	0	0.00
2. SAG W/ STANDING WATER	27	22.30
3. SAG W/ SILTATION	5	4.10
4. COMPRESSED COUPLING	3	2.50
5. COMPRESSED PIPE	1	0.80
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

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	.... I-75 N+S	
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	24	19.80
1. SAG	0	0.00
2. SAG W/ STANDING WATER	22	18.20
3. SAG W/ SILTATION	7	5.80
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	2	1.60
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	22	45.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	13	27.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	2.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	8	16.00
2. PT. COVERED HEADWALL	20	41.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	10	20.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	2	4.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	8	16.00
3. COVERED HEADWALL	1	2.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	1	2.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	0	0.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	0	0.00
4. PLUGGED HEADWALL	6	12.00
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	1	2.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	2.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	4	8.00
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	49	
* FULLY IN SERVICE	13	27.00
* PT. IN SERVICE	14	29.00
* OUT OF SERVICE	22	45.00

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe < 60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	49	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	22	45.00
PT. COVERED HEADWALL	20	41.00
COVERED HEADWALL	1	2.00
PLUGGED HEADWALL	6	12.00
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	19	39.00
DIRT. OR DIRT.+.....	10	20.00
VEG. OR VEG. + ...	11	22.00
CON. OR CON. + ...	0	0.00
4. SCREEN :		
NONE	21	43.00
OPEN	19	39.00
PARTIALLY OPEN	4	8.00
BLOCK	4	8.00
RUSTED SCREEN	19	39.00
5. SILTATION :		
NONE	43	88.00
SLIGHTLY	3	6.00
MODERATELY	0	0.00
SEVERLY	3	6.00
6. FLOW :		
YES	42	86.00
NO	7	14.00
7. DRAINAGE :		
GOOD	31	63.00
POOR	18	37.00

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	49	
II. OPEN OUTLET PIPE (>80% OPEN)	13	27.00
III. COMPRESSED/BLOCKED OUTLET PIPE	36	73.00
* 60% - 80% OPEN	12	24.00
* 40% - 60% OPEN	4	8.00
* < 40 % OPEN OR BLOCKED	20	41.00
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	36	73.00
1. SAG	10	20.00
2. SAG W/ STANDING WATER	12	24.00
3. SAG W/ SILTATION	7	14.00
4. COMPRESSED COUPLING	10	20.00
5. COMPRESSED PIPE	8	16.00
6. BACKFILL IN PIPE	5	10.00
7. SEPARATION AT COUPLING	1	2.00
8. RIP IN PIPE	2	4.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	37	76.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	19	39.00
3. SAG W/ SILTATION	9	18.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	15	31.00
6. BACKFILL IN PIPE	4	8.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	2	4.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLET PIPE WITH PROBLEM AT E :	8	16.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	6	12.00
3. SAG W/ SILTATION	2	4.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	0	0.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

CONT'ED

	.... I-75 N	
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	7	14.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	6	12.00
3. SAG W/ SILTATION	0	0.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	1	2.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

******* PAVEMENT SUBDRAIN EVALUATION *******
*** ALL INSPECTED HEADWALL ***

ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	OUTLET TYPE/LOC./COND	COVER MATR.	SCREEN		SILT.	FLOW	DRAINAGE
120.000	S-H / PT.COV.		NONE		NONE	YES	GOOD
122.020	S-H / CLEAN		OPEN		NONE	YES	GOOD
122.500	S-H / PT.COV.		PT.OPEN		NONE	YES	GOOD
132.100	S-H / COVER.		NONE		NONE	YES	GOOD
133.100	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
134.100	S-B / CLEAN		NONE		NONE	YES	GOOD
136.100	S-H / PT.COV.		NONE		NONE	YES	GOOD
137.247	S-B / CLEAN		NONE		NONE	YES	GOOD
138.300	S-H / CLEAN		OPEN		NONE	YES	GOOD
139.300	S-H / PT.COV.	G	PT.OPEN	RUSTED	NONE	YES	POOR
140.867	S-H / PLUGGED	G	BLOCK	RUSTED	NONE	YES	GOOD
141.278	S-H / PLUGGED	G+V	BLOCK		NONE	NO	GOOD
142.725	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
143.000	S-H / PLUGGED	G	BLOCK	RUSTED	NONE	NO	POOR
145.000	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	GOOD
146.500	S-H / CLEAN		NONE		NONE	YES	GOOD
147.480	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
148.150	S-H / PT.COV.	G	OPEN	RUSTED	NONE	NO	POOR
149.090	S-H / PT.COV.	G	NONE		NONE	YES	POOR
150.430	S-H / CLEAN		NONE		NONE	YES	GOOD
151.390	S-H / PT.COV.	G	NONE		NONE	YES	GOOD
152.290	S-B / CLEAN		NONE		NONE	YES	GOOD
153.300	S-H / CLEAN		NONE		NONE	YES	GOOD
154.800	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	POOR
155.900	S-H / PT.COV.		NONE		SLIGHT	YES	POOR
156.080	S-H / CLEAN		OPEN		NONE	YES	GOOD
157.270	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	POOR
158.630	S-B / CLEAN		NONE		NONE	YES	GOOD
159.090	S-H / CLEAN		NONE		NONE	YES	POOR
160.860	S-H / PT.COV.	V	NONE		NONE	YES	POOR
161.280	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	GOOD
162.130	S-H / PT.COV.	G	NONE		NONE	YES	POOR
163.040	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	GOOD
164.610	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	POOR
165.039	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
166.440	S-H / PT.COV.	G/D/V	PT.OPEN	RUSTED	NONE	YES	GOOD
167.560	S-H / CLEAN		NONE		NONE	YES	GOOD
168.360	S-H / PLUGGED	G+D	BLOCK	RUSTED	NONE	NO	POOR
169.700	S-B / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
170.430	S-H / CLEAN	G+V	OPEN	RUSTED	NONE	YES	GOOD
171.540	S-B / CLEAN		NONE		NONE	YES	POOR
172.210	S-H / CLEAN		OPEN		NONE	YES	GOOD

CONT'ED

173.250	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
174.300	S-H / PT.COV.	V	OPEN		SLIGHT	YES	POOR
175.440	S-H / PLUGGED	G/D/V	NONE		SEV.	NO	POOR
176.070	S-H / CLEAN		NONE		NONE	YES	GOOD
177.340	S-H / PT.COV.	D	NONE		SEV.	NO	POOR
178.210	S-H / PLUGGED	D	NONE		SEV.	NO	POOR
179.050	S-H / PT.COV.	D+V	PT.OPEN		SLIGHT	YES	POOR

NOTE : COVER MATR --> G=GRAVEL; D=DIRT.; V=VEG.; C=CONCRETE

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = NORTH
HEADWALL = CLEAN

MILEPOST	OUTLET TYPE/LOC.	SCREEN	SILT.	FLOW	DRAINAGE
122.020	S-H	OPEN	NONE	YES	GOOD
133.100	S-H	OPEN	RUSTED NONE	YES	GOOD
134.100	S-B	NONE	NONE	YES	GOOD
137.247	S-B	NONE	NONE	YES	GOOD
138.300	S-H	OPEN	NONE	YES	GOOD
142.725	S-H	OPEN	RUSTED NONE	YES	GOOD
146.500	S-H	NONE	NONE	YES	GOOD
147.480	S-H	OPEN	RUSTED NONE	YES	GOOD
150.430	S-H	NONE	NONE	YES	GOOD
152.290	S-B	NONE	NONE	YES	GOOD
153.300	S-H	NONE	NONE	YES	GOOD
156.080	S-H	OPEN	NONE	YES	GOOD
158.630	S-B	NONE	NONE	YES	GOOD
159.090	S-H	NONE	NONE	YES	POOR
165.039	S-H	OPEN	RUSTED NONE	YES	GOOD
167.560	S-H	NONE	NONE	YES	GOOD
169.700	S-B	OPEN	RUSTED NONE	YES	GOOD
170.430	S-H	OPEN	RUSTED NONE	YES	GOOD
171.540	S-B	NONE	NONE	YES	POOR
172.210	S-H	OPEN	NONE	YES	GOOD
173.250	S-H	OPEN	RUSTED NONE	YES	GOOD
176.070	S-H	NONE	NONE	YES	GOOD

NUMBER OF CLEAN HEADWALL = 22
% OF CLEAN HEADWALL = 44.9

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = NORTH
HEADWALL = PT. COVER./COVER.

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN		SILT.	FLOW	DRAINAGE
120.000	S-H	G/D/V	NONE		NONE	YES	GOOD
122.500	S-H	G/D/V	PT.OPEN		NONE	YES	GOOD
132.100	S-H	G/D/V	NONE		NONE	YES	GOOD
136.100	S-H	G/D/V	NONE		NONE	YES	GOOD
139.300	S-H	G	PT.OPEN	RUSTED	NONE	YES	POOR
145.000	S-H	G	OPEN	RUSTED	NONE	YES	GOOD
148.150	S-H	G	OPEN	RUSTED	NONE	NO	POOR
149.090	S-H	G	NONE		NONE	YES	POOR
151.390	S-H	G	NONE		NONE	YES	GOOD
154.800	S-H	G	OPEN	RUSTED	NONE	YES	POOR
155.900	S-H	G/D/V	NONE		SLIGHT	YES	POOR
157.270	S-H	G	OPEN	RUSTED	NONE	YES	POOR
160.860	S-H	V	NONE		NONE	YES	POOR
161.280	S-H	G	OPEN	RUSTED	NONE	YES	GOOD
162.130	S-H	G	NONE		NONE	YES	POOR
163.040	S-H	G	OPEN	RUSTED	NONE	YES	GOOD
164.610	S-H	G	OPEN	RUSTED	NONE	YES	POOR
166.440	S-H	G/D/V	PT.OPEN	RUSTED	NONE	YES	GOOD
174.300	S-H	V	OPEN		SLIGHT	YES	POOR
177.340	S-H	D	NONE		SEV.	NO	POOR

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PT.COVERED HEADWALL = 20
% OF PT. COVERED HEADWALL = 40.8
NUMBER OF COVERED HEADWALL = 1
% OF COVERED HEADWALL = 2.0

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991
HEADWALL = PLUGGED

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN		SILT.	FLOW	DRAINAGE
140.867	S-H	G	BLOCK	RUSTED	NONE	YES	GOOD
141.278	S-H	G+V	BLOCK		NONE	NO	GOOD
143.000	S-H	G	BLOCK	RUSTED	NONE	NO	POOR
168.360	S-H	G+D	BLOCK	RUSTED	NONE	NO	POOR
175.440	S-H	G/D/V	NONE		SEV.	NO	POOR
178.210	S-H	D	NONE		SEV.	NO	POOR

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PLUGGED HEADWALL = 6
% OF PLUGGED HEADWALL = 12.2

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = NORTH
HEADWALL = S-H
NO SCREEN/RUSTED

MILEPOST	OUTLET	SCREEN		SILT.	FLOW	DRAINAGE
120.000	PT.COVER.	NONE		NONE	YES	GOOD
132.100	COVER.	NONE		NONE	YES	GOOD
133.100	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
136.100	PT.COVER.	NONE		NONE	YES	GOOD
137.247	CLEAN	NONE		NONE	YES	GOOD
139.300	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	POOR
140.867	PLUGGED	BLOCK	RUSTED	NONE	YES	GOOD
142.725	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
143.000	PLUGGED	BLOCK	RUSTED	NONE	NO	POOR
145.000	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
146.500	CLEAN	NONE		NONE	YES	GOOD
147.480	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
148.150	PT.COVER.	OPEN	RUSTED	NONE	NO	POOR
149.090	PT.COVER.	NONE		NONE	YES	POOR
150.430	CLEAN	NONE		NONE	YES	GOOD
151.390	PT.COVER.	NONE		NONE	YES	GOOD
152.290	CLEAN	NONE		NONE	YES	GOOD
153.300	CLEAN	NONE		NONE	YES	GOOD
154.800	PT.COVER.	OPEN	RUSTED	NONE	YES	POOR
155.900	PT.COVER.	NONE		SLIGHT	YES	POOR
157.270	PT.COVER.	OPEN	RUSTED	NONE	YES	POOR
158.630	CLEAN	NONE		NONE	YES	GOOD
159.090	CLEAN	NONE		NONE	YES	POOR
160.860	PT.COVER.	NONE		NONE	YES	POOR
161.280	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
162.130	PT.COVER.	NONE		NONE	YES	POOR
163.040	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
164.610	PT.COVER.	OPEN	RUSTED	NONE	YES	POOR
165.039	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
166.440	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
167.560	CLEAN	NONE		NONE	YES	GOOD
168.360	PLUGGED	BLOCK	RUSTED	NONE	NO	POOR
169.700	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
170.430	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
171.540	CLEAN	NONE		NONE	YES	POOR
173.250	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
175.440	PLUGGED	NONE		SEV.	NO	POOR
176.070	CLEAN	NONE		NONE	YES	GOOD
177.340	PT.COVER.	NONE		SEV.	NO	POOR
178.210	PLUGGED	NONE		SEV.	NO	POOR

NUMBER OF HEADWALL W/ NO OR RUSTED SCREEN = 40
% = 81.6

******* PAVEMENT SUBDRAIN EVALUATION *******
** ALL INSPECTED OUTLET PIPE **
ROUTE = I-75
DIRECTION = NORTH
INSP. DATE= MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
120.000	FLEX.		2			2	2	PIPE OPEN
122.020	FLEX.		2+5			2	2	PIPE OPEN
122.500	FLEX.	2+3+5						BLOCKED AT 5.0
132.100	FLEX.						2	PIPE OPEN
133.100	FLEX.	1	2					PIPE OPEN
134.100	RIGID	5	2					PIPE OPEN
136.100	FLEX.	2+3	2					20-40 % OPEN AT 5.0
137.247	FLEX.	1+4	5					BLOCKED AT 4.0
138.300	FLEX.	2	5+6+8					BLOCKED AT 4.0
139.300	FLEX.	2+3+7	5+6					40-60 % OPEN AT10.0
140.867	FLEX.	4+6	3			2	2	10-20 % OPEN AT 6.0
141.278	FLEX.	1+4	5					40-60 % OPEN AT 5.0
142.725	FLEX.	2	5					0 % OPEN AT 2.0
143.000	FLEX.	2+3+4+5						PIPE OPEN
145.000	FLEX.	3	3					60-80 % OPEN
146.500	FLEX.	5	3					PIPE OPEN
147.480	FLEX.	1	2			2		BLOCKED AT 2.5
148.150	FLEX.		5+6					PIPE OPEN
149.090	FLEX.	2+3	3					60-80 % OPEN
150.430	FLEX.	1	3			3		20-40 % OPEN AT10.0
151.390	FLEX.	1	3					BLOCKED AT 1.0
152.290	FLEX.	1+6+8						BLOCKED AT 5.0
153.300	FLEX.	1	2+5					BLOCKED AT 2.0
154.800	FLEX.	5+6+8						PIPE OPEN
155.900	FLEX.		2+5			2	2	20-40 % OPEN AT 2.0
156.080	FLEX.	4	5					40-60 % OPEN AT 1.0
157.270	FLEX.	4						BLOCKED AT23.0
158.630	FLEX.		2+3+6+8					20-40 % OPEN AT 2.0
159.090	FLEX.	4	5					PIPE OPEN
160.860	FLEX.		2+3					20-40 % OPEN AT 4.0
161.280	FLEX.	2	5					60-80 % OPEN
162.130	FLEX.	2	5					PIPE OPEN
163.040	FLEX.		2					40-60 % OPEN AT 2.0
164.610	FLEX.	5	5					BLOCKED AT 6.0
165.039	FLEX.	4	2					60-80 % OPEN
166.440	FLEX.		2					60-80 % OPEN
167.560	FLEX.		2					60-80 % OPEN
168.360	FLEX.	2	2			3		60-80 % OPEN
169.700	FLEX.	1+4	5					60-80 % OPEN
170.430	FLEX.	2+5						60-80 % OPEN
171.540	FLEX.		2+3				5	60-80 % OPEN
172.210	FLEX.	3	2					60-80 % OPEN
173.250	FLEX.	2	2			2	2	10-20 % OPEN AT 1.5
174.300	FLEX.	4+5						BLOCKED AT 1.0
175.440	FLEX.							PIPE OPEN
176.070	RIGID							BLOCKED AT 2.0
177.340	RIGID	6						BLOCKED AT 1.5
178.210	FLEX.	6						60-80 % OPEN
179.050	FLEX.	1	2					

NUMBER OF OPEN OUTLET PIPE = 13
% OF OPEN OUTLET PIPE = 27
NUMBER OF COMPRESSED/BLOCKED OUTLET PIPE = 36
% OF COMPRESSED/BLOCKED OUTLET PIPE = 73

******* PAVEMENT SUBDRAIN EVALUATION *******
** OPEN OUTLET PIPE **
ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
120.000	FLEX.		2			2	2	
122.020	FLEX.		2+5			2	2	
132.100	FLEX.						2	
133.100	FLEX.	1	2					
134.100	RIGID	5	2					
136.100	FLEX.	2+3	2					
145.000	FLEX.	3	3					
147.480	FLEX.	1	2			2		
149.090	FLEX.	2+3	3					
155.900	FLEX.		2+5			2	2	
160.860	FLEX.		2+3					
163.040	FLEX.		2					
176.070	RIGID							

NUMBER OF OPEN OUTLET PIPE = 13
% OF OPEN OUTLET PIPE = 26.5

******* PAVEMENT SUBDRAIN EVALUATION *******
* COMPRESSED/BLOCKED OUTLET PIPE *
ROUTE = I-75
DIRECTION = NORTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
122.500	FLEX.	2+3+5						BLOCKED AT 5.0
137.247	FLEX.	1+4	5					20-40 % OPEN AT 5.0
138.300	FLEX.	2	5+6+8					BLOCKED AT 4.0
139.300	FLEX.	2+3+7	5+6					BLOCKED AT 4.0
140.867	FLEX.	4+6	3			2	2	40-60 % OPEN AT10.0
141.278	FLEX.	1+4	5					10-20 % OPEN AT 6.0
142.725	FLEX.	2	5					40-60 % OPEN AT 5.0
143.000	FLEX.	2+3+4+5						0 % OPEN AT 2.0
146.500	FLEX.	5	3					60-80 % OPEN
148.150	FLEX.		5+6					BLOCKED AT 2.5
150.430	FLEX.	1	3			3		60-80 % OPEN
151.390	FLEX.	1	3					20-40 % OPEN AT10.0
152.290	FLEX.	1+6+8						BLOCKED AT 1.0
153.300	FLEX.	1	2+5					BLOCKED AT 5.0
154.800	FLEX.	5+6+8						BLOCKED AT 2.0
156.080	FLEX.	4	5					20-40 % OPEN AT 2.0
157.270	FLEX.	4						40-60 % OPEN AT 1.0
158.630	FLEX.		2+3+6+8					BLOCKED AT23.0
159.090	FLEX.	4	5					20-40 % OPEN AT 2.0
161.280	FLEX.	2	5					20-40 % OPEN AT 4.0
162.130	FLEX.	2	5					60-80 % OPEN
164.610	FLEX.	5	5					40-60 % OPEN AT 2.0
165.039	FLEX.	4	2					BLOCKED AT 6.0
166.440	FLEX.		2					60-80 % OPEN
167.560	FLEX.		2					60-80 % OPEN
168.360	FLEX.	2	2			3		60-80 % OPEN
169.700	FLEX.	1+4	5					60-80 % OPEN
170.430	FLEX.	2+5						60-80 % OPEN
171.540	FLEX.		2+3				5	60-80 % OPEN
172.210	FLEX.	3	2					60-80 % OPEN
173.250	FLEX.	2	2			2	2	60-80 % OPEN
174.300	FLEX.	4+5						10-20 % OPEN AT 1.5
175.440	FLEX.							BLOCKED AT 1.0
177.340	RIGID	6						BLOCKED AT 2.0
178.210	FLEX.	6						BLOCKED AT 1.5
179.050	FLEX.	1	2					60-80 % OPEN

NUMBER OF BLOCKED/COMPRESSED OUTLET PIPE = 36
% OF BLOCKED/COMPRESSED OUTLET PIPE = 73.5

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	20	28.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	11	15.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	2	3.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	7	10.00
2. PT. COVERED HEADWALL	30	42.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	20	28.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	3	4.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	7	10.00
3. COVERED HEADWALL	10	14.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	5	7.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	1.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	4	6.00
4. PLUGGED HEADWALL	12	17.00
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	6	8.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	0	0.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	6	8.00
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	72	
* FULLY IN SERVICE	11	15.00
* PT. IN SERVICE	31	43.00
* OUT OF SERVICE	30	42.00

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe < 60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	72	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	20	28.00
PT. COVERED HEADWALL	30	42.00
COVERED HEADWALL	10	14.00
PLUGGED HEADWALL	12	17.00
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	21	29.00
DIRT. OR DIRT.+.....	35	49.00
VEG. OR VEG. + ...	38	53.00
CON. OR CON. + ...	1	1.00
4. SCREEN :		
NONE	16	22.00
OPEN	24	33.00
PARTIALLY OPEN	16	22.00
BLOCK	16	22.00
RUSTED SCREEN	23	32.00
5. SILTATION :		
NONE	59	82.00
SLIGHTLY	4	6.00
MODERATELY	6	8.00
SEVERLY	3	4.00
6. FLOW :		
YES	60	83.00
NO	12	17.00
7. DRAINAGE :		
GOOD	45	63.00
POOR	27	38.00

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	72	
II. OPEN OUTLET PIPE (>80% OPEN)	18	25.00
III. COMPRESSED/BLOCKED OUTLET PIPE	54	75.00
* 60% - 80% OPEN	24	33.00
* 40% - 60% OPEN	6	8.00
* < 40 % OPEN OR BLOCKED	24	33.00
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	60	83.00
1. SAG	9	13.00
2. SAG W/ STANDING WATER	20	28.00
3. SAG W/ SILTATION	9	13.00
4. COMPRESSED COUPLING	20	28.00
5. COMPRESSED PIPE	17	24.00
6. BACKFILL IN PIPE	13	18.00
7. SEPARATION AT COUPLING	3	4.00
8. RIP IN PIPE	5	7.00
9. COMPRESSED PANEL	1	1.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	46	64.00
1. SAG	5	7.00
2. SAG W/ STANDING WATER	23	32.00
3. SAG W/ SILTATION	11	15.00
4. COMPRESSED COUPLING	1	1.00
5. COMPRESSED PIPE	14	19.00
6. BACKFILL IN PIPE	5	7.00
7. SEPARATION AT COUPLING	1	1.00
8. RIP IN PIPE	3	4.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLET PIPE WITH PROBLEM AT E :	24	33.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	21	29.00
3. SAG W/ SILTATION	3	4.00
4. COMPRESSED COUPLING	3	4.00
5. COMPRESSED PIPE	1	1.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

CONT'ED

9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	17	24.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	16	22.00
3. SAG W/ SILTATION	7	10.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	1	1.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

******* PAVEMENT SUBDRAIN EVALUATION *******
*** ALL INSPECTED HEADWALL ***

ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	OUTLET TYPE/LOC./COND	COVER MATR.	SCREEN		SILT.	FLOW	DRAINAGE
119.150	S-B / CLEAN		NONE	RUSTED	NONE	YES	GOOD
119.300	S-H / PT.COV.		OPEN		NONE	YES	GOOD
119.600	S-H / PT.COV.	D+V	PT.OPEN		NONE	YES	POOR
119.850	S-H / COVER.		BLOCK		NONE	YES	POOR
120.500	S-H / PLUGGED		OPEN		NONE	YES	POOR
120.650	S-H / PLUGGED	G	OPEN		NONE	YES	POOR
120.870	S-H / CLEAN		OPEN		NONE	YES	POOR
120.980	S-H / PT.COV.		PT.OPEN		NONE	YES	GOOD
121.230	S-H / CLEAN		OPEN		NONE	YES	GOOD
121.500	S-H / PT.COV.		OPEN		NONE	YES	GOOD
121.700	S-H / COVER.	D+V	BLOCK		NONE	YES	GOOD
121.810	S-H / PT.COV.		PT.OPEN		NONE	YES	POOR
122.010	S-H / PT.COV.		PT.OPEN		NONE	YES	POOR
122.270	S-H / CLEAN		OPEN		NONE	YES	GOOD
122.670	S-H / PT.COV.	D+V	PT.OPEN		NONE	YES	GOOD
122.900	S-H / PT.COV.		PT.OPEN		NONE	YES	GOOD
123.200	S-H / COVER.		BLOCK		NONE	YES	GOOD
123.650	S-B / CLEAN		NONE		NONE	YES	GOOD
125.900	S-H / PT.COV.	D+V	OPEN	RUSTED	NONE	YES	GOOD
126.990	S-H / PT.COV.	V	OPEN	RUSTED	NONE	YES	POOR
127.800	S-H / PT.COV.	V	OPEN	RUSTED	NONE	YES	GOOD
128.800	S-H / PLUGGED	G/D/V	BLOCK		NONE	NO	POOR
129.920	S-H / COVER.	G+D	PT.OPEN		MOD.	YES	POOR
130.990	S-H / PLUGGED	G+V	BLOCK		NONE	NO	GOOD
131.250	S-H / PLUGGED	G+V	BLOCK		NONE	NO	POOR
132.700	S-H / PT.COV.	D	OPEN		MOD.	YES	POOR
133.980	S-H / CLEAN		OPEN		NONE	YES	GOOD
134.900	S-H / PT.COV.	V	PT.OPEN	RUSTED	MOD.	NO	POOR
135.800	S-H / CLEAN		OPEN		NONE	YES	GOOD
136.300	S-H / PT.COV.	G	PT.OPEN	RUSTED	NONE	YES	GOOD
137.900	S-H / PT.COV.	V	PT.OPEN	RUSTED	NONE	YES	POOR
138.130	S-H / PLUGGED	G/D/V	BLOCK		NONE	NO	GOOD
139.800	S-H / PLUGGED	G/D/V	BLOCK		NONE	NO	GOOD
141.180	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
143.630	S-H / PLUGGED	D+V	BLOCK	RUSTED	NONE	YES	GOOD
144.200	S-H / PT.COV.	G/D/V	PT.OPEN	RUSTED	SLIGHT	YES	POOR
145.847	S-H / PT.COV.		NONE		MOD.	YES	GOOD
146.840	S-H / PT.COV.	G+V	NONE		NONE	YES	POOR
147.900	S-H / PT.COV.	V	NONE		MOD.	YES	POOR
148.153	S-H / CLEAN		NONE		NONE	YES	GOOD
149.672	S-H / COVER.	G	BLOCK	RUSTED	NONE	YES	GOOD

CONT'ED

150.870	S-H / CLEAN		NONE		NONE	YES	GOOD
151.280	S-H / PT.COV.	V	NONE		SEV.	YES	GOOD
152.700	S-H / PLUGGED	G/D/V	BLOCK	RUSTED	NONE	NO	GOOD
153.900	S-H / PT.COV.	G	OPEN	RUSTED	NONE	NO	GOOD
154.810	S-H / PLUGGED	G+D	BLOCK		NONE	YES	GOOD
155.160	S-H / PT.COV.	G/D/C	PT.OPEN	RUSTED	NONE	YES	GOOD
155.460	S-H / PT.COV.	D	NONE		NONE	YES	GOOD
156.960	S-H / PT.COV.	D+V	OPEN	RUSTED	NONE	YES	GOOD
157.710	S-H / COVER.	G/D/V	BLOCK	RUSTED	NONE	NO	GOOD
158.850	S-H / COVER.	G+D	BLOCK	RUSTED	NONE	NO	POOR
159.930	S-H / CLEAN		OPEN		NONE	YES	GOOD
160.200	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
161.540	S-H / CLEAN		OPEN		NONE	YES	GOOD
162.750	S-H / PT.COV.	V	PT.OPEN		SEV.	YES	POOR
163.590	S-H / CLEAN		OPEN	RUSTED	NONE	YES	POOR
164.690	S-H / CLEAN		NONE		NONE	YES	GOOD
165.540	S-H / PT.COV.	G/D/V	PT.OPEN		NONE	NO	POOR
166.700	S-H / CLEAN		OPEN		NONE	YES	GOOD
167.470	S-H / CLEAN		OPEN		NONE	YES	GOOD
168.720	S-H / PT.COV.	D+V	PT.OPEN	RUSTED	NONE	YES	GOOD
169.850	S-H / PT.COV.	G+D	PT.OPEN		NONE	YES	GOOD
170.850	S-H / PLUGGED	D+V	BLOCK	RUSTED	NONE	YES	GOOD
171.730	S-H / COVER.	D+V	BLOCK	RUSTED	SEV.	YES	POOR
172.630	S-H / PT.COV.	D+V	OPEN	RUSTED	NONE	YES	POOR
173.430	S-H / CLEAN		NONE		NONE	YES	GOOD
174.740	S-H / COVER.	D+V	NONE		NONE	YES	GOOD
175.740	S-H / PLUGGED	G/D/V	NONE		NONE	NO	POOR
176.890	S-H / PT.COV.	V	NONE		MOD.	YES	POOR
177.630	S-H / CLEAN		NONE		SLIGHT	YES	GOOD
178.510	S-H / COVER.	D+V	NONE		SLIGHT	YES	POOR
179.690	S-H / CLEAN		OPEN		SLIGHT	YES	POOR

NOTE : COVER MATR --> G=GRAVEL; D=DIRT.; V=VEG.; C=CONCRETE

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = SOUTH
HEADWALL = CLEAN

MILEPOST	OUTLET TYPE/LOC.	SCREEN	SILT.	FLOW	DRAINAGE
119.150	S-B	NONE	RUSTED	NONE	YES	GOOD
120.870	S-H	OPEN		NONE	YES	POOR
121.230	S-H	OPEN		NONE	YES	GOOD
122.270	S-H	OPEN		NONE	YES	GOOD
123.650	S-B	NONE		NONE	YES	GOOD
133.980	S-H	OPEN		NONE	YES	GOOD
135.800	S-H	OPEN		NONE	YES	GOOD
141.180	S-H	OPEN	RUSTED	NONE	YES	GOOD
148.153	S-H	NONE		NONE	YES	GOOD
150.870	S-H	NONE		NONE	YES	GOOD
159.930	S-H	OPEN		NONE	YES	GOOD
160.200	S-H	OPEN	RUSTED	NONE	YES	GOOD
161.540	S-H	OPEN		NONE	YES	GOOD
163.590	S-H	OPEN	RUSTED	NONE	YES	POOR
164.690	S-H	NONE		NONE	YES	GOOD
166.700	S-H	OPEN		NONE	YES	GOOD
167.470	S-H	OPEN		NONE	YES	GOOD
173.430	S-H	NONE		NONE	YES	GOOD
177.630	S-H	NONE		SLIGHT	YES	GOOD
179.690	S-H	OPEN		SLIGHT	YES	POOR

NUMBER OF CLEAN HEADWALL = 20
% OF CLEAN HEADWALL = 27.8

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = SOUTH
HEADWALL = PT. COVER./COVER.

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN	SILT.	FLOW	DRAINAGE
119.300	S-H	G/D/V	OPEN	NONE	YES	GOOD
119.600	S-H	D+V	PT.OPEN	NONE	YES	POOR
119.850	S-H	G/D/V	BLOCK	NONE	YES	POOR
120.980	S-H	G/D/V	PT.OPEN	NONE	YES	GOOD
121.500	S-H	G/D/V	OPEN	NONE	YES	GOOD
121.700	S-H	D+V	BLOCK	NONE	YES	GOOD
121.810	S-H	G/D/V	PT.OPEN	NONE	YES	POOR
122.010	S-H	G/D/V	PT.OPEN	NONE	YES	POOR
122.670	S-H	D+V	PT.OPEN	NONE	YES	GOOD
122.900	S-H	G/D/V	PT.OPEN	NONE	YES	GOOD
123.200	S-H	G/D/V	BLOCK	NONE	YES	GOOD
125.900	S-H	D+V	OPEN RUSTED	NONE	YES	GOOD
126.990	S-H	V	OPEN RUSTED	NONE	YES	POOR
127.800	S-H	V	OPEN RUSTED	NONE	YES	GOOD
129.920	S-H	G+D	PT.OPEN	MOD.	YES	POOR
132.700	S-H	D	OPEN	MOD.	YES	POOR
134.900	S-H	V	PT.OPEN RUSTED	MOD.	NO	POOR
136.300	S-H	G	PT.OPEN RUSTED	NONE	YES	GOOD
137.900	S-H	V	PT.OPEN RUSTED	NONE	YES	POOR
144.200	S-H	G/D/V	PT.OPEN RUSTED	SLIGHT	YES	POOR
145.847	S-H	G/D/V	NONE	MOD.	YES	GOOD
146.840	S-H	G+V	NONE	NONE	YES	POOR
147.900	S-H	V	NONE	MOD.	YES	POOR
149.672	S-H	G	BLOCK RUSTED	NONE	YES	GOOD
151.280	S-H	V	NONE	SEV.	YES	GOOD
153.900	S-H	G	OPEN RUSTED	NONE	NO	GOOD
155.160	S-H	G+D+C	PT.OPEN RUSTED	NONE	YES	GOOD
155.460	S-H	D	NONE	NONE	YES	GOOD
156.960	S-H	D+V	OPEN RUSTED	NONE	YES	GOOD
157.710	S-H	G/D/V	BLOCK RUSTED	NONE	NO	GOOD

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PT.COVERED HEADWALL = 30
% OF PT. COVERED HEADWALL = 41.7
NUMBER OF COVERED HEADWALL = 10
% OF COVERED HEADWALL = 13.9

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = SOUTH
HEADWALL = PLUGGED

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN	SILT.	FLOW	DRAINAGE
120.500	S-H	G/D/V	OPEN	NONE	YES	POOR
120.650	S-H	G	OPEN	NONE	YES	POOR
128.800	S-H	G/D/V	BLOCK	NONE	NO	POOR
130.990	S-H	G+V	BLOCK	NONE	NO	GOOD
131.250	S-H	G+V	BLOCK	NONE	NO	POOR
138.130	S-H	G/D/V	BLOCK	NONE	NO	GOOD
139.800	S-H	G/D/V	BLOCK	NONE	NO	GOOD
143.630	S-H	D+V	BLOCK RUSTED	NONE	YES	GOOD
152.700	S-H	G/D/V	BLOCK RUSTED	NONE	NO	GOOD
154.810	S-H	G+D	BLOCK	NONE	YES	GOOD
170.850	S-H	D+V	BLOCK RUSTED	NONE	YES	GOOD
175.740	S-H	G/D/V	NONE	NONE	NO	POOR

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PLUGGED HEADWALL = 12
% OF PLUGGED HEADWALL = 16.7

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-75
DIRECTION = SOUTH
HEADWALL = S-H
NO SCREEN/RUSTED

MILEPOST	OUTLET	SCREEN		SILT.	FLOW	DRAINAGE
119.150	CLEAN	NONE	RUSTED	NONE	YES	GOOD
123.650	CLEAN	NONE		NONE	YES	GOOD
125.900	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
126.990	PT.COVER.	OPEN	RUSTED	NONE	YES	POOR
127.800	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
134.900	PT.COVER.	PT.OPEN	RUSTED	MOD.	NO	POOR
136.300	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
137.900	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	POOR
141.180	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
143.630	PLUGGED	BLOCK	RUSTED	NONE	YES	GOOD
144.200	PT.COVER.	PT.OPEN	RUSTED	SLIGHT	YES	POOR
145.847	PT.COVER.	NONE		MOD.	YES	GOOD
146.840	PT.COVER.	NONE		NONE	YES	POOR
147.900	PT.COVER.	NONE		MOD.	YES	POOR
148.153	CLEAN	NONE		NONE	YES	GOOD
149.672	COVER.	BLOCK	RUSTED	NONE	YES	GOOD
150.870	CLEAN	NONE		NONE	YES	GOOD
151.280	PT.COVER.	NONE		SEV.	YES	GOOD
152.700	PLUGGED	BLOCK	RUSTED	NONE	NO	GOOD
153.900	PT.COVER.	OPEN	RUSTED	NONE	NO	GOOD
155.160	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
155.460	PT.COVER.	NONE		NONE	YES	GOOD
156.960	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
157.710	COVER.	BLOCK	RUSTED	NONE	NO	GOOD
158.850	COVER.	BLOCK	RUSTED	NONE	NO	POOR
160.200	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
163.590	CLEAN	OPEN	RUSTED	NONE	YES	POOR
164.690	CLEAN	NONE		NONE	YES	GOOD
168.720	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
170.850	PLUGGED	BLOCK	RUSTED	NONE	YES	GOOD
171.730	COVER.	BLOCK	RUSTED	SEV.	YES	POOR
172.630	PT.COVER.	OPEN	RUSTED	NONE	YES	POOR
173.430	CLEAN	NONE		NONE	YES	GOOD
174.740	COVER.	NONE		NONE	YES	GOOD
175.740	PLUGGED	NONE		NONE	NO	POOR
176.890	PT.COVER.	NONE		MOD.	YES	POOR
177.630	CLEAN	NONE		SLIGHT	YES	GOOD
178.510	COVER.	NONE		SLIGHT	YES	POOR

NUMBER OF HEADWALL W/ NO OR RUSTED SCREEN = 38
% = 52.8

******* PAVEMENT SUBDRAIN EVALUATION *******
** ALL INSPECTED OUTLET PIPE **
ROUTE = I-75
DIRECTION = SOUTH
INSP. DATE= MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
119.150	FLEX.	5+6+8+9						BLOCKED AT 1.0
119.300	FLEX.	4	5		5	4		20-40 % OPEN AT16.0
119.600	FLEX.	4+5	2+3+5	5				BLOCKED AT 8.0
119.850	FLEX.	4+5						BLOCKED AT 1.0
120.500	FLEX.	1	2+3			2+3	2+3	60-80 % OPEN
120.650	FLEX.	4+6	3			4		PIPE OPEN
120.870	FLEX.	1+4	5			2	2	60-80 % OPEN
120.980	FLEX.	2+6+7	6+7			2		60-80 % OPEN
121.230	FLEX.	1+4+7	1	3				PIPE OPEN
121.500	FLEX.	1	1					PIPE OPEN
121.700	FLEX.	1	2+3			2		PIPE OPEN
121.810	FLEX.	3	3			2		60-80 % OPEN
122.010	FLEX.	3				2		PIPE OPEN
122.270	FLEX.	1	3			2+4+5		60-80 % OPEN
122.670	FLEX.	4+5+6	4+5+6					BLOCKED AT 3.0
122.900	FLEX.	2	3			2	2	60-80 % OPEN
123.200	FLEX.	3			3	2	2	60-80 % OPEN
123.650	FLEX.	2+5			2			60-80 % OPEN
125.900	FLEX.	2	2			2		PIPE OPEN
126.990	FLEX.	2+5						60-80 % OPEN
127.800	FLEX.	6+8	2					PIPE OPEN
128.800	FLEX.	2+4+5+6				2+3	2+3	60-80 % OPEN
129.920	FLEX.		2+3					PIPE OPEN
130.990	FLEX.	4	1			2		PIPE OPEN
131.250	FLEX.	4+5						BLOCKED AT 2.0
132.700	FLEX.	2	2			2	2	60-80 % OPEN
133.980	FLEX.	2	2			2	2	60-80 % OPEN
134.900	FLEX.		5					10-20 % OPEN AT 6.0
135.800	FLEX.	1+7	2+3				2+3	60-80 % OPEN
136.300	FLEX.	2	2				2+3	60-80 % OPEN
137.900	FLEX.	4	2			2	2	60-80 % OPEN
138.130	FLEX.	1	1+5					20-40 % OPEN AT 4.0
139.800	FLEX.	2	5+8					10-20 % OPEN AT 3.0
141.180	FLEX.	2+4+5+8						20-40 % OPEN AT 2.0
143.630	FLEX.	6	5+6					0 % OPEN AT 4.0
144.200	FLEX.	2+3+6	5+6					BLOCKED AT 5.0
145.847	FLEX.	3					2	60-80 % OPEN
146.840	FLEX.	3					2+3	60-80 % OPEN
147.900	FLEX.	2+3	2			2	3	60-80 % OPEN
148.153	FLEX.	2	1					PIPE OPEN
149.672	FLEX.	3						0 % OPEN AT 0.0
150.870	FLEX.	1+5						40-60 % OPEN AT 2.5
151.280	FLEX.		5+8					40-60 % OPEN AT 4.0
152.700	FLEX.							PIPE OPEN
153.900	FLEX.							PIPE OPEN
154.810	FLEX.	4+5						20-40 % OPEN AT 1.0
155.160	FLEX.	4+5						40-60 % OPEN AT 2.0
155.460	FLEX.	4+5						40-60 % OPEN AT 1.5
156.960	FLEX.		2			2	2+3+5	60-80 % OPEN
157.710	FLEX.	5						0 % OPEN AT 0.0
158.850	FLEX.	2	6+8					40-60 % OPEN AT 3.0
159.930	FLEX.		2			2		PIPE OPEN
160.200	FLEX.	4+5	5					40-60 % OPEN AT 3.0

CONT'ED

161.540	FLEX.	4+5+6			0 % OPEN AT 2.0
162.750	FLEX.	6			0 % OPEN AT 2.0
163.590	FLEX.	2	2	2 2	PIPE OPEN
164.690	FLEX.		2	2 2	60-80 % OPEN
165.540	FLEX.	2+3	2+3	3	PIPE OPEN
166.700	FLEX.	2	2	2 2	PIPE OPEN
167.470	FLEX.	4			20-40 % OPEN AT 3.5
168.720	FLEX.	2	2		PIPE OPEN
169.850	FLEX.		2		60-80 % OPEN
170.850	FLEX.	4			PIPE OPEN
171.730	FLEX.		2		60-80 % OPEN
172.630	FLEX.		2+3		60-80 % OPEN
173.430	FLEX.	8	5		BLOCKED AT 5.0
174.740	FLEX.	8	2		60-80 % OPEN
175.740	FLEX.	6			BLOCKED AT 1.0
176.890	FLEX.	6			BLOCKED AT 1.0
177.630	FLEX.	2	5		10-20 % OPEN AT 5.0
178.510	FLEX.	4+5+6			BLOCKED AT 1.5
179.690	RIGID		5		20-40 % OPEN AT25.0

NUMBER OF OPEN OUTLET PIPE	=	18
% OF OPEN OUTLET PIPE	=	25
NUMBER OF COMPRESSED/BLOCKED OUTLET PIPE	=	54
% OF COMPRESSED/BLOCKED OUTLET PIPE	=	75

******* PAVEMENT SUBDRAIN EVALUATION *******
** OPEN OUTLET PIPE **
ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
120.650	FLEX.	4+6	3			4		
121.230	FLEX.	1+4+7	1	3				
121.500	FLEX.	1	1					
121.700	FLEX.	1	2+3			2		
122.010	FLEX.	3				2		
125.900	FLEX.	2	2			2		
127.800	FLEX.	6+8	2					
129.920	FLEX.		2+3					
130.990	FLEX.	4	1			2		
148.153	FLEX.	2	1					
152.700	FLEX.							
153.900	FLEX.							
159.930	FLEX.		2			2		
163.590	FLEX.	2	2			2	2	
165.540	FLEX.	2+3	2+3			3		
166.700	FLEX.	2	2			2	2	
168.720	FLEX.	2	2					
170.850	FLEX.	4						

NUMBER OF OPEN OUTLET PIPE = 18
% OF OPEN OUTLET PIPE = 25.0

******* PAVEMENT SUBDRAIN EVALUATION *******
* COMPRESSED/BLOCKED OUTLET PIPE *
ROUTE = I-75
DIRECTION = SOUTH
INSP.DATE = MAY/JUNE 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
119.150	FLEX.	5+6+8+9						BLOCKED AT 1.0
119.300	FLEX.	4	5		5	4		20-40 % OPEN AT16.0
119.600	FLEX.	4+5	2+3+5	5				BLOCKED AT 8.0
119.850	FLEX.	4+5						BLOCKED AT 1.0
120.500	FLEX.	1	2+3			2+3	2+3	60-80 % OPEN
120.870	FLEX.	1+4	5			2	2	60-80 % OPEN
120.980	FLEX.	2+6+7	6+7			2		60-80 % OPEN
121.810	FLEX.	3	3			2		60-80 % OPEN
122.270	FLEX.	1	3			2+4+5		60-80 % OPEN
122.670	FLEX.	4+5+6	4+5+6					BLOCKED AT 3.0
122.900	FLEX.	2	3			2	2	60-80 % OPEN
123.200	FLEX.	3			3	2	2	60-80 % OPEN
123.650	FLEX.	2+5			2			60-80 % OPEN
126.990	FLEX.	2+5						60-80 % OPEN
128.800	FLEX.	2+4+5+6				2+3	2+3	60-80 % OPEN
131.250	FLEX.	4+5						BLOCKED AT 2.0
132.700	FLEX.	2	2			2	2	60-80 % OPEN
133.980	FLEX.	2	2			2	2	60-80 % OPEN
134.900	FLEX.		5					10-20 % OPEN AT 6.0
135.800	FLEX.	1+7	2+3				2+3	60-80 % OPEN
136.300	FLEX.	2	2				2+3	60-80 % OPEN
137.900	FLEX.	4	2			2	2	60-80 % OPEN
138.130	FLEX.	1	1+5					20-40 % OPEN AT 4.0
139.800	FLEX.	2	5+8					10-20 % OPEN AT 3.0
141.180	FLEX.	2+4+5+8						20-40 % OPEN AT 2.0
143.630	FLEX.	6	5+6					0 % OPEN AT 4.0
144.200	FLEX.	2+3+6	5+6					BLOCKED AT 5.0
145.847	FLEX.	3					2	60-80 % OPEN
146.840	FLEX.	3					2+3	60-80 % OPEN
147.900	FLEX.	2+3	2			2	3	60-80 % OPEN
149.672	FLEX.	3						0 % OPEN AT 0.0
150.870	FLEX.	1+5						40-60 % OPEN AT 2.5
151.280	FLEX.		5+8					40-60 % OPEN AT 4.0
154.810	FLEX.	4+5						20-40 % OPEN AT 1.0
155.160	FLEX.	4+5						40-60 % OPEN AT 2.0
155.460	FLEX.	4+5						40-60 % OPEN AT 1.5
156.960	FLEX.		2			2	2+3+5	60-80 % OPEN
157.710	FLEX.	5						0 % OPEN AT 0.0
158.850	FLEX.	2	6+8					40-60 % OPEN AT 3.0
160.200	FLEX.	4+5	5					40-60 % OPEN AT 3.0
161.540	FLEX.	4+5+6						0 % OPEN AT 2.0
162.750	FLEX.	6						0 % OPEN AT 2.0
164.690	FLEX.		2			2	2	60-80 % OPEN
167.470	FLEX.	4						20-40 % OPEN AT 3.5
169.850	FLEX.		2					60-80 % OPEN
171.730	FLEX.		2					60-80 % OPEN
172.630	FLEX.		2+3					60-80 % OPEN
173.430	FLEX.	8	5					BLOCKED AT 5.0

CONT'ED

174.740	FLEX. 8	2	60-80 % OPEN
175.740	FLEX. 6		BLOCKED AT 1.0
176.890	FLEX. 6		BLOCKED AT 1.0
177.630	FLEX. 2	5	10-20 % OPEN AT 5.0
178.510	FLEX. 4+5+6		BLOCKED AT 1.5
179.690	RIGID	5	20-40 % OPEN AT25.0

NUMBER OF BLOCKED/COMPRESSED OUTLET PIPE = 54
% OF BLOCKED/COMPRESSED OUTLET PIPE = 75.0

APPENDIX C
SUMMARY OF I-71

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-71
DIRECTION = SOUTH+NORTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	48	42.50
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	29	25.70
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	5	4.40
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	14	12.40
2. PT. COVERED HEADWALL	34	30.10
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	17	15.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	9	8.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	8	7.00
3. COVERED HEADWALL	6	5.30
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	3	2.70
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	0.90
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	2	1.80
4. PLUGGED HEADWALL	25	22.10
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	5	4.40
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	7	6.20
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	13	11.50
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	113	
* FULLY IN SERVICE	29	25.60
* PT. IN SERVICE	35	31.00
* OUT OF SERVICE	49	43.40

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe 40%-60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-71
DIRECTION = SOUTH+NORTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	113	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	48	42.50
PT. COVERED HEADWALL	34	30.10
COVERED HEADWALL	6	5.30
PLUGGED HEADWALL	25	22.10
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	44	38.90
DIRT. OR DIRT.+.....	33	29.20
VEG. OR VEG. + ...	26	23.00
CON. OR CON. + ...	10	9.00
4. SCREEN :		
NONE	28	24.80
OPEN	53	46.80
PARTIALLY OPEN	16	14.20
BLOCK	16	14.20
RUSTED SCREEN	37	33.00
5. SILTATION :		
NONE	92	81.40
SLIGHTLY	13	11.50
MODERATELY	5	4.40
SEVERLY	3	2.70
6. FLOW :		
YES	107	94.70
NO	6	5.30
7. DRAINAGE :		
GOOD	96	85.00
POOR	17	15.00

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-71
DIRECTION = SOUTH+NORTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	113	
II. OPEN PIPE (>80% OPEN)	52	46.00
III. COMPRESSED/BLOCKED PIPE	61	54.00
* 60% - 80% OPEN	2	1.80
* 40% - 60% OPEN	22	19.50
* < 40 % OPEN OR BLOCKED	37	32.70
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	67	59.30
1. SAG	28	24.80
2. SAG W/ STANDING WATER	16	14.20
3. SAG W/ SILTATION	9	8.00
4. COMPRESSED COUPLING	5	4.40
5. COMPRESSED PIPE	21	18.60
6. BACKFILL IN PIPE	5	4.40
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	2	1.80
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	80	70.80
1. SAG	20	9.70
2. SAG W/ STANDING WATER	25	22.10
3. SAG W/ SILTATION	10	8.80
4. COMPRESSED COUPLING	3	2.70
5. COMPRESSED PIPE	34	30.00
6. BACKFILL IN PIPE	6	5.30
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	2	1.80
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLET PIPE WITH PROBLEM AT E :	10	8.80
1. SAG	6	5.30
2. SAG W/ STANDING WATER	1	0.90
3. SAG W/ SILTATION	2	1.80
4. COMPRESSED COUPLING	1	0.90
5. COMPRESSED PIPE	0	0.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

CONT'ED

9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	6	5.30
1. SAG	1	0.90
2. SAG W/ STANDING WATER	2	1.80
3. SAG W/ SILTATION	1	0.90
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	1	0.90
6. BACKFILL IN PIPE	1	0.90
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-71
DIRECTION = NORTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	17	29.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	11	19.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	2.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	5	9.00
2. PT. COVERED HEADWALL	21	36.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	11	19.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	3	5.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	7	12.00
3. COVERED HEADWALL	5	9.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	2	3.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	1	2.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	2	3.00
4. PLUGGED HEADWALL	15	26.00
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	1	2.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	5	9.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	9	16.00
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	58	
* FULLY IN SERVICE	11	19.00
* PT. IN SERVICE	18	31.00
* OUT OF SERVICE	29	50.00

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe < 60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-71
DIRECTION = NORTH
DATE = JULY 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	58	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	17	29.00
PT. COVERED HEADWALL	21	36.00
COVERED HEADWALL	5	9.00
PLUGGED HEADWALL	15	26.00
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	30	52.00
DIRT. OR DIRT.+.....	17	29.00
VEG. OR VEG. + ...	13	22.00
CON. OR CON. + ...	6	10.00
4. SCREEN :		
NONE	12	21.00
OPEN	22	38.00
PARTIALLY OPEN	14	24.00
BLOCK	10	17.00
RUSTED SCREEN	21	36.00
5. SILTATION :		
NONE	49	84.00
SLIGHTLY	4	7.00
MODERATELY	3	5.00
SEVERLY	2	3.00
6. FLOW :		
YES	54	93.00
NO	4	7.00
7. DRAINAGE :		
GOOD	50	86.00
POOR	8	14.00

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-71
DIRECTION = NORTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	58	
II. OPEN OUTLET PIPE (>80% OP	25	43.00
III. COMPRESSED/BLOCKED OUTLET PIPE	33	57.00
* 60% - 80% OPEN	0	0.00
* 40% - 60% OPEN	10	17.00
* < 40 % OPEN OR BLOCKED	23	40.00
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	29	50.00
1. SAG	12	21.00
2. SAG W/ STANDING WATER	8	14.00
3. SAG W/ SILTATION	8	14.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	5	9.00
6. BACKFILL IN PIPE	1	2.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	1	2.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	47	81.00
1. SAG	14	24.00
2. SAG W/ STANDING WATER	14	24.00
3. SAG W/ SILTATION	6	10.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	19	33.00
6. BACKFILL IN PIPE	3	5.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	2	3.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLT PIPE WITH PROBLEM AT E :	3	5.00
1. SAG	3	5.00
2. SAG W/ STANDING WATER	0	0.00
3. SAG W/ SILTATION	0	0.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	0	0.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

CONT'ED

9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	5	9.00
1. SAG	1	2.00
2. SAG W/ STANDING WATER	1	2.00
3. SAG W/ SILTATION	1	2.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	1	2.00
6. BACKFILL IN PIPE	1	2.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

******* PAVEMENT SUBDRAIN EVALUATION *******
*** ALL INSPECTED HEADWALL ***

ROUTE = I-71
DIRECTION = NORTH

MILEPOST	HEADWALL TYPE/LOC./COND	COVER MATR.	SCREEN		SILT.	FLOW	DRAINAGE
16.040	S-H / PLUGGED	G	BLOCK		NONE	YES	GOOD
17.210	S-H / PLUGGED	G/D/V	BLOCK		NONE	NO	GOOD
18.060	S-H / PLUGGED	G/D/V	BLOCK		NONE	YES	GOOD
19.090	S-H / PT.COV.	G/D/V	PT.OPEN		NONE	YES	GOOD
20.270	S-H / PLUGGED	G/D/V	BLOCK		NONE	YES	GOOD
21.020	S-H / PT.COV.	G	PT.OPEN		SLIGHT	YES	GOOD
22.590	S-H / PLUGGED	G/D/V	BLOCK		NONE	YES	POOR
23.250	S-H / PLUGGED	G+V+C	PT.OPEN	RUSTED	NONE	YES	POOR
24.490	S-H / PT.COV.		PT.OPEN	RUSTED	MOD.	YES	POOR
25.670	S-H / PLUGGED	C	OPEN	RUSTED	NONE	YES	GOOD
26.200	S-H / PLUGGED	C	OPEN	RUSTED	NONE	YES	GOOD
27.100	S-H / PLUGGED	C	BLOCK		NONE	NO	POOR
28.220	S-H / PLUGGED		OPEN	RUSTED	NONE	YES	POOR
30.840	S-H / COVER.		PT.OPEN		NONE	YES	GOOD
31.410	S-H / COVER.		BLOCK		NONE	NO	GOOD
32.540	S-H / PT.COV.		OPEN		NONE	YES	GOOD
33.660	S-H / CLEAN		OPEN		NONE	YES	GOOD
34.110	S-H / PLUGGED	D+V	BLOCK	RUSTED	NONE	YES	GOOD
35.800	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	GOOD
36.680	S-H / COVER.	G	BLOCK	RUSTED	NONE	YES	GOOD
37.660	S-H / CLEAN		OPEN		NONE	YES	GOOD
39.870	S-H / CLEAN		NONE		NONE	YES	GOOD
40.100	S-H / CLEAN		NONE		NONE	YES	GOOD
41.260	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
42.100	S-H / CLEAN		OPEN		NONE	YES	GOOD
43.230	S-H / PT.COV.	D+V	NONE		MOD.	YES	GOOD
44.250	S-H / CLEAN		OPEN		NONE	YES	GOOD
45.110	S-H / PT.COV.	G+V	OPEN	RUSTED	NONE	YES	GOOD
46.130	S-H / CLEAN		OPEN		NONE	YES	GOOD
47.060	S-H / CLEAN		NONE		NONE	YES	GOOD
48.560	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
49.400	S-H / PT.COV.	G	NONE		NONE	YES	GOOD
50.360	S-H / CLEAN		NONE		NONE	YES	GOOD
51.500	S-H / PT.COV.	G	OPEN		NONE	YES	GOOD
52.230	S-H / PT.COV.	G	OPEN		NONE	YES	GOOD
53.130	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
54.990	S-H / PT.COV.	G	OPEN	RUSTED	SLIGHT	YES	POOR
55.190	S-H / PLUGGED	C	OPEN	RUSTED	NONE	YES	GOOD
56.400	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
57.320	S-H / PLUGGED	G+D	PT.OPEN	RUSTED	MOD.	YES	POOR
58.410	S-H / PT.COV.	G	OPEN	RUSTED	NONE	YES	GOOD
59.330	S-H / COVER.	G	PT.OPEN	RUSTED	SLIGHT	YES	GOOD

CONT'ED

60.420	S-H / PT.COV.	PT.OPEN	SLIGHT	YES	GOOD
61.910	S-H / PLUGGED	PT.OPEN RUSTED	NONE	YES	GOOD
62.680	S-H / CLEAN	OPEN	NONE	YES	GOOD
63.610	S-H / PT.COV.	PT.OPEN RUSTED	NONE	YES	GOOD
65.130	S-H / PT.COV.	PT.OPEN RUSTED	NONE	YES	GOOD
66.450	S-H / CLEAN	OPEN	NONE	YES	GOOD
67.090	S-H / COVER.	PT.OPEN	NONE	YES	GOOD
68.870	S-H / PT.COV.	PT.OPEN	SEV.	YES	GOOD
69.160	S-H / PLUGGED	BLOCK	SEV.	NO	GOOD
70.430	S-H / PT.COV.	PT.OPEN	NONE	YES	POOR
71.020	S-H / PT.COV.	NONE	NONE	YES	GOOD
72.360	S-H / PT.COV.	NONE	NONE	YES	GOOD
73.240	S-H / CLEAN	NONE	NONE	YES	GOOD
74.070	S-H / PT.COV.	NONE	NONE	YES	GOOD
75.210	S-H / PT.COV.	NONE	NONE	YES	GOOD
76.150	S-H / CLEAN	NONE	NONE	YES	GOOD

NOTE : COVER MATR --> G=GRAVEL; D=DIRT.; V=VEG.; C=CONCRETE

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = NORTH
HEADWALL = CLEAN

MILEPOST	HEADWALL TYPE/LOC.	SCREEN	SILT.	FLOW	DRAINAGE
33.660	S-H	OPEN	NONE	YES	GOOD
37.660	S-H	OPEN	NONE	YES	GOOD
39.870	S-H	NONE	NONE	YES	GOOD
40.100	S-H	NONE	NONE	YES	GOOD
41.260	S-H	OPEN	RUSTED NONE	YES	GOOD
42.100	S-H	OPEN	NONE	YES	GOOD
44.250	S-H	OPEN	NONE	YES	GOOD
46.130	S-H	OPEN	NONE	YES	GOOD
47.060	S-H	NONE	NONE	YES	GOOD
48.560	S-H	OPEN	RUSTED NONE	YES	GOOD
50.360	S-H	NONE	NONE	YES	GOOD
53.130	S-H	OPEN	RUSTED NONE	YES	GOOD
56.400	S-H	OPEN	RUSTED NONE	YES	GOOD
62.680	S-H	OPEN	NONE	YES	GOOD
66.450	S-H	OPEN	NONE	YES	GOOD
73.240	S-H	NONE	NONE	YES	GOOD
76.150	S-H	NONE	NONE	YES	GOOD

NUMBER OF CLEAN HEADWALL = 17
% OF CLEAN HEADWALL = 29.3

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = NORTH
INSP.DATE = JULY 1991
HWADWALL = PLUGGED

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN	SILT.	FLOW	DRAINAGE
16.040	S-H	G	BLOCK	NONE	YES	GOOD
17.210	S-H	G/D/V	BLOCK	NONE	NO	GOOD
18.060	S-H	G/D/V	BLOCK	NONE	YES	GOOD
20.270	S-H	G/D/V	BLOCK	NONE	YES	GOOD
22.590	S-H	G/D/V	BLOCK	NONE	YES	POOR
23.250	S-H	G+V+C	PT.OPEN	RUSTED NONE	YES	POOR
25.670	S-H	C	OPEN	RUSTED NONE	YES	GOOD
26.200	S-H	C	OPEN	RUSTED NONE	YES	GOOD
27.100	S-H	C	BLOCK	NONE	NO	POOR
28.220	S-H	G/D/V	OPEN	RUSTED NONE	YES	POOR
34.110	S-H	D+V	BLOCK	RUSTED NONE	YES	GOOD
55.190	S-H	C	OPEN	RUSTED NONE	YES	GOOD
57.320	S-H	G+D	PT.OPEN	RUSTED MOD.	YES	POOR
61.910	S-H	G/D/V	PT.OPEN	RUSTED NONE	YES	GOOD
69.160	S-H	G/D/V	BLOCK	SEV.	NO	GOOD

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PLUGGED HEADWALL = 15
% OF PLUGGED HEADWALL = 25.9

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = NORTH
HEADWALL = PT. COVER./COVER.

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN	SILT.	FLOW	DRAINAGE
19.090	S-H	G/D/V PT.OPEN		NONE	YES	GOOD
21.020	S-H	G PT.OPEN		SLIGHT	YES	GOOD
24.490	S-H	G/D/V PT.OPEN	RUSTED	MOD.	YES	POOR
30.840	S-H	G/D/V PT.OPEN		NONE	YES	GOOD
31.410	S-H	G/D/V BLOCK		NONE	NO	GOOD
32.540	S-H	G/D/V OPEN		NONE	YES	GOOD
35.800	S-H	G OPEN	RUSTED	NONE	YES	GOOD
36.680	S-H	G BLOCK	RUSTED	NONE	YES	GOOD
43.230	S-H	D+V NONE		MOD.	YES	GOOD
45.110	S-H	G+V OPEN	RUSTED	NONE	YES	GOOD
49.400	S-H	G NONE		NONE	YES	GOOD
51.500	S-H	G OPEN		NONE	YES	GOOD
52.230	S-H	G OPEN		NONE	YES	GOOD
54.990	S-H	G OPEN	RUSTED	SLIGHT	YES	POOR
58.410	S-H	G OPEN	RUSTED	NONE	YES	GOOD
59.330	S-H	G PT.OPEN	RUSTED	SLIGHT	YES	GOOD
60.420	S-H	G/D/V PT.OPEN		SLIGHT	YES	GOOD
63.610	S-H	G/D/V PT.OPEN	RUSTED	NONE	YES	GOOD
65.130	S-H	G/D/V PT.OPEN	RUSTED	NONE	YES	GOOD
67.090	S-H	G/D/V PT.OPEN		NONE	YES	GOOD
68.870	S-H	G/D/V PT.OPEN		SEV.	YES	GOOD

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PT.COVERED HEADWALL = 21
% OF PT. COVERED HEADWALL = 36.2
NUMBER OF COVERED HEADWALL = 5
% OF COVERED HEADWALL = 8.6

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = NORTH
HEADWALL = S-H
NO SCREEN/RUSTED

MILEPOST	HEADWALL	SCREEN		SILT.	FLOW	DRAINAGE
23.250	PLUGGED	PT.OPEN	RUSTED	NONE	YES	POOR
24.490	PT.COVER.	PT.OPEN	RUSTED	MOD.	YES	POOR
25.670	PLUGGED	OPEN	RUSTED	NONE	YES	GOOD
26.200	PLUGGED	OPEN	RUSTED	NONE	YES	GOOD
28.220	PLUGGED	OPEN	RUSTED	NONE	YES	POOR
34.110	PLUGGED	BLOCK	RUSTED	NONE	YES	GOOD
35.800	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
36.680	COVER.	BLOCK	RUSTED	NONE	YES	GOOD
39.870	CLEAN	NONE		NONE	YES	GOOD
40.100	CLEAN	NONE		NONE	YES	GOOD
41.260	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
43.230	PT.COVER.	NONE		MOD.	YES	GOOD
45.110	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
47.060	CLEAN	NONE		NONE	YES	GOOD
48.560	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
49.400	PT.COVER.	NONE		NONE	YES	GOOD
50.360	CLEAN	NONE		NONE	YES	GOOD
53.130	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
54.990	PT.COVER.	OPEN	RUSTED	SLIGHT	YES	POOR
55.190	PLUGGED	OPEN	RUSTED	NONE	YES	GOOD
56.400	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
57.320	PLUGGED	PT.OPEN	RUSTED	MOD.	YES	POOR
58.410	PT.COVER.	OPEN	RUSTED	NONE	YES	GOOD
59.330	COVER.	PT.OPEN	RUSTED	SLIGHT	YES	GOOD
61.910	PLUGGED	PT.OPEN	RUSTED	NONE	YES	GOOD
63.610	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
65.130	PT.COVER.	PT.OPEN	RUSTED	NONE	YES	GOOD
71.020	PT.COVER.	NONE		NONE	YES	GOOD
72.360	PT.COVER.	NONE		NONE	YES	GOOD
73.240	CLEAN	NONE		NONE	YES	GOOD
74.070	PT.COVER.	NONE		NONE	YES	GOOD
75.210	PT.COVER.	NONE		NONE	YES	GOOD
76.150	CLEAN	NONE		NONE	YES	GOOD

NUMBER OF HEADWALL W/ NO OR RUSTED SCREEN = 33
% = 56.9

******* PAVEMENT SUBDRAIN EVALUATION *******
** ALL INSPECTED OUTLET PIPE **
ROUTE = I-71
DIRECTION = NORTH
INSP. DATE= JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
16.040	FLEX.		1+5					0 % OPEN AT 4.0
17.210	FLEX.	2	5+6+8					40-60 % OPEN AT10.0
18.060	FLEX.	1	5					40-60 % OPEN AT10.0
19.090	FLEX.	2	5					0 % OPEN AT 4.5
20.270	FLEX.	5	5					40-60 % OPEN AT 3.0
21.020	FLEX.	3	2					PIPE OPEN
22.590	FLEX.	3	5					40-60 % OPEN AT 3.5
23.250	FLEX.							20-40 % OPEN AT 0.0
24.490	FLEX.							20-40 % OPEN AT 0.0
25.670	FLEX.							20-40 % OPEN AT 0.0
26.200	FLEX.							10-20 % OPEN AT 0.0
27.100	FLEX.	3	2+5+8					BLOCKED AT 7.0
28.220	FLEX.							20-40 % OPEN AT 0.0
30.840	FLEX.	2+3	5					40-60 % OPEN AT12.0
31.410	FLEX.	2	5					0 % OPEN AT 6.0
32.540	FLEX.		6					10-20 % OPEN AT 2.0
33.660	FLEX.	1	2					PIPE OPEN
34.110	FLEX.	2+3+5	5					40-60 % OPEN AT 1.0
35.800	FLEX.	3	3+5+6					BLOCKED AT 7.0
36.680	FLEX.	3	5					10-20 % OPEN AT 6.0
37.660	FLEX.	1+5	1					PIPE OPEN
39.870	FLEX.	1	1+5					BLOCKED AT 5.0
40.100	FLEX.	1+5						BLOCKED AT 2.0
41.260	FLEX.	2	5					40-60 % OPEN AT 5.0
42.100	FLEX.	1+5	1+5				3	PIPE OPEN
43.230	FLEX.	1	5					40-60 % OPEN AT 8.0
44.250	FLEX.	3	2+3					PIPE OPEN
45.110	FLEX.	6						0 % OPEN AT 0.0
46.130	FLEX.		2				2	PIPE OPEN
47.060	FLEX.		1					PIPE OPEN
48.560	FLEX.		2				5	10-20 % OPEN AT23.5
49.400	FLEX.						6	40-60 % OPEN AT20.0
50.360	FLEX.	2	2					PIPE OPEN
51.500	FLEX.		2					PIPE OPEN
52.230	FLEX.	1	5					PIPE OPEN
53.130	FLEX.	1	1					BLOCKED AT 5.0
54.990	FLEX.	1	2					BLOCKED AT 3.0
55.190	FLEX.							BLOCKED AT 0.0
56.400	FLEX.	]	2					BLOCKED AT 7.0
57.320	FLEX.		3					PIPE OPEN
58.410	FLEX.		1			1		PIPE OPEN
59.330	FLEX.		1					PIPE OPEN
60.420	FLEX.		1					PIPE OPEN
61.910	FLEX.	1	5					10-20 % OPEN AT 6.0
62.680	FLEX.		2					PIPE OPEN
63.610	FLEX.		1			1	1	PIPE OPEN
65.130	FLEX.		3					PIPE OPEN
66.450	FLEX.		3					80-100% OPEN
67.090	FLEX.		1					80-100% OPEN
68.870	FLEX.							BLOCKED AT 0.0
69.160	FLEX.							BLOCKED AT 0.0
70.430	FLEX.	2	2+5					40-60 % OPEN AT14.0
71.020	FLEX.		2					PIPE OPEN
								CONT'ED

... I-71 N

72.360 FLEX.	2		PIPE OPEN
73.240 FLEX.	1		PIPE OPEN
74.070 FLEX.	1	1	PIPE OPEN
75.210 FLEX. 1+8	1		PIPE OPEN
76.150 FLEX.	3		PIPE OPEN

NUMBER OF OPEN OUTLET PIPE	=	23
% OF OPEN OUTLET PIPE	=	40
NUMBER OF COMPRESSED/BLOCKED OUTLET PIPE	=	35
% OF COMPRESSED/BLOCKED OUTLET PIPE	=	60

******* PAVEMENT SUBDRAIN EVALUATION *******
** OPEN OUTLET PIPE *

ROUTE = I-71
DIRECTION = NORTH
INSP.DATE = JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
21.020	FLEX.	3	2					
33.660	FLEX.	1	2					
37.660	FLEX.	1+5	1					
42.100	FLEX.	1+5	1+5				3	
44.250	FLEX.	3	2+3					
46.130	FLEX.		2				2	
47.060	FLEX.		1					
50.360	FLEX.	2	2					
51.500	FLEX.		2					
52.230	FLEX.	1	5					
57.320	FLEX.		3					
58.410	FLEX.		1			1		
59.330	FLEX.		1					
60.420	FLEX.		1					
62.680	FLEX.		2					
63.610	FLEX.		1			1	1	
65.130	FLEX.		3					
66.450	FLEX.		3					80-100% OPEN
67.090	FLEX.		1					80-100% OPEN
71.020	FLEX.		2					
72.360	FLEX.		2					
73.240	FLEX.		1					
74.070	FLEX.		1			1		
75.210	FLEX.	1+8	1					
76.150	FLEX.		3					

NUMBER OF OPEN OUTLET PIPE = 25
% OF OPEN OUTLET PIPE = 43.1

******* PAVEMENT SUBDRAIN EVALUATION *******
* COMPRESSED/BLOCKED OUTLET PIPE *
ROUTE = I-71
DIRECTION = NORTH
INSP.DATE = JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
16.040	FLEX.		1+5					0 % OPEN AT 4.0
17.210	FLEX.	2	5+6+8					40-60 % OPEN AT10.0
18.060	FLEX.	1	5					40-60 % OPEN AT10.0
19.090	FLEX.	2	5					0 % OPEN AT 4.5
20.270	FLEX.	5	5					40-60 % OPEN AT 3.0
22.590	FLEX.	3	5					40-60 % OPEN AT 3.5
23.250	FLEX.							20-40 % OPEN AT 0.0
24.490	FLEX.							20-40 % OPEN AT 0.0
25.670	FLEX.							20-40 % OPEN AT 0.0
26.200	FLEX.							10-20 % OPEN AT 0.0
27.100	FLEX.	3	2+5+8					BLOCKED AT 7.0
28.220	FLEX.							20-40 % OPEN AT 0.0
30.840	FLEX.	2+3	5					40-60 % OPEN AT12.0
31.410	FLEX.	2	5					0 % OPEN AT 6.0
32.540	FLEX.		6					10-20 % OPEN AT 2.0
34.110	FLEX.	2+3+5	5					40-60 % OPEN AT 1.0
35.800	FLEX.	3	3+5+6					BLOCKED AT 7.0
36.680	FLEX.	3	5					10-20 % OPEN AT 6.0
39.870	FLEX.	1	1+5					BLOCKED AT 5.0
40.100	FLEX.	1+5						BLOCKED AT 2.0
41.260	FLEX.	2	5					40-60 % OPEN AT 5.0
43.230	FLEX.	1	5					40-60 % OPEN AT 8.0
45.110	FLEX.	6						0 % OPEN AT 0.0
48.560	FLEX.		2				5	10-20 % OPEN AT23.5
49.400	FLEX.						6	40-60 % OPEN AT20.0
53.130	FLEX.	1	1					BLOCKED AT 5.0
54.990	FLEX.	1	2					BLOCKED AT 3.0
55.190	FLEX.							BLOCKED AT 0.0
56.400	FLEX.	]	2					BLOCKED AT 7.0
61.910	FLEX.	1	5					10-20 % OPEN AT 6.0
68.870	FLEX.							BLOCKED AT 0.0
69.160	FLEX.							BLOCKED AT 0.0
70.430	FLEX.	2	2+5					40-60 % OPEN AT14.0

NUMBER OF BLOCKED/COMPRESSED OUTLET PIPE = 33
% OF BLOCKED/COMPRESSED OUTLET PIPE = 56.9

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL & OUTLET PIPE

ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
1. CLEAN HEADWALL	31	56.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	18	33.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	4	7.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	9	16.00
2. PT. COVERED HEADWALL	13	24.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	6	11.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	6	11.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	1	2.00
3. COVERED HEADWALL	1	2.00
* WITH OPEN OUTLET PIPE (> = 60% OPEN)	1	2.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	0	0.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	0	0.00
4. PLUGGED HEADWALL	10	18.00
* WITH OPEN OUTLET PIPE (>= 60% OPEN)	4	7.00
* WITH PARTIALLY OPEN OUTLET PIPE (40-60% OPEN)	2	4.00
* WITH BLOCKED OUTLET PIPE (< 40% OPEN)	4	7.00
5. HEADWALL & OUTLET PIPE CONDITION :		
* INSPECTED HEADWALL & PIPE	55	
* FULLY IN SERVICE	18	33.00
* PT. IN SERVICE	17	31.00
* OUT OF SERVICE	20	36.00

Note : -Fully in Service = headwall is clean with pipe > 60% open
-PT. in service = clean headwall with pipe 40-60% open, or PT. covered/covered headwall with pipe < 60% open.
-Out of service = Plugged headwall, or outlet with pipe < 40% open

********** SUMMARY**********
******* PAVEMENT SUBDRAIN EVALUATION *******
HEADWALL

ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
1. INSPECTED HEADWALL	55	
2. HEADWALL CONDITION :		
CLEAN HEADWALL	31	56.00
PT. COVERED HEADWALL	13	24.00
COVERED HEADWALL	1	2.00
PLUGGED HEADWALL	10	18.00
3. COVERING MATERIAL :		
GRAVEL OR GRAVEL +...	14	25.00
DIRT. OR DIRT.+.....	16	29.00
VEG. OR VEG. + ...	13	24.00
CON. OR CON. + ...	4	7.00
4. SCREEN :		
NONE	16	29.00
OPEN	31	56.00
PARTIALLY OPEN	2	4.00
BLOCK	6	11.00
RUSTED SCREEN	16	29.00
5. SILTATION :		
NONE	43	78.00
SLIGHTLY	9	16.00
MODERATELY	2	4.00
SEVERLY	1	2.00
6. FLOW :		
YES	53	96.00
NO	2	4.00
7. DRAINAGE :		
GOOD	46	84.00
POOR	9	16.00

******** SUMMARY **********
******* PAVEMENT SUBDRAIN EVALUATION *******
***** OUTLET PIPE *****

ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

	NUMBER	PERCENTAGE
I. INSPECTED OUTLET PIPE	55	
II. OPEN OUTLET PIPE (>80% OPEN)	27	49.00
III. COMPRESSED/BLOCKED OUTLET PIPE	28	51.00
* 60% - 80% OPEN	2	4.00
* 40% - 60% OPEN	12	22.00
* < 40 % OPEN OR BLOCKED	14	25.00
IV. OUTLET PIPE WITH PROBLEM AT/NEAR OUTLET/ HEADWALL (AT A)	38	69.00
1. SAG	16	29.00
2. SAG W/ STANDING WATER	8	15.00
3. SAG W/ SILTATION	1	2.00
4. COMPRESSED COUPLING	5	9.00
5. COMPRESSED PIPE	16	29.00
6. BACKFILL IN PIPE	4	7.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	1	2.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
V. OUTLET PIPE WITH PROBLEM AT B :	33	60.00
1. SAG	6	11.00
2. SAG W/ STANDING WATER	11	20.00
3. SAG W/ SILTATION	4	7.00
4. COMPRESSED COUPLING	3	5.00
5. COMPRESSED PIPE	15	27.00
6. BACKFILL IN PIPE	3	5.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VI. OUTLET PIPE WITH PROBLEM AT E :	7	13.00
1. SAG	3	5.00
2. SAG W/ STANDING WATER	1	2.00
3. SAG W/ SILTATION	2	4.00
4. COMPRESSED COUPLING	1	2.00
5. COMPRESSED PIPE	0	0.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00

CONT'ED

9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00
VII. OUTLET PIPE WITH PROBLEM AT F :	1	2.00
1. SAG	0	0.00
2. SAG W/ STANDING WATER	1	2.00
3. SAG W/ SILTATION	0	0.00
4. COMPRESSED COUPLING	0	0.00
5. COMPRESSED PIPE	0	0.00
6. BACKFILL IN PIPE	0	0.00
7. SEPARATION AT COUPLING	0	0.00
8. RIP IN PIPE	0	0.00
9. COMPRESSED PANEL	0	0.00
10. COMPRESSED AND SILTED PANEL	0	0.00

******* PAVEMENT SUBDRAIN EVALUATION *******
*** ALL INSPECTED HEADWALL ***

ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

MILEPOST	OUTLET TYPE/LOC./COND	COVER MATR.	SCREEN		SILT.	FLOW	DRAINAGE
15.860	S-H / PLUGGED		NONE		NONE	YES	POOR
16.720	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
17.870	S-H / CLEAN		OPEN		NONE	YES	GOOD
18.610	S-H / CLEAN		OPEN		NONE	YES	GOOD
19.330	S-H / PLUGGED		BLOCK		NONE	YES	POOR
20.730	S-H / PT.COV.		PT.OPEN		SLIGHT	YES	POOR
21.990	S-H / PT.COV.		NONE		NONE	YES	GOOD
22.870	S-H / PLUGGED		BLOCK		NONE	NO	POOR
23.630	S-H / CLEAN		NONE		NONE	YES	GOOD
24.860	S-H / PT.COV.		OPEN	RUSTED	SLIGHT	YES	POOR
25.780	S-H / PT.COV.		NONE		NONE	YES	GOOD
26.890	S-H / PLUGGED		BLOCK	RUSTED	SEV.	NO	GOOD
28.340	S-H / PT.COV.		OPEN		SLIGHT	YES	GOOD
29.840	S-H / PT.COV.		PT.OPEN	RUSTED	SLIGHT	YES	GOOD
30.820	S-H / CLEAN		OPEN		NONE	YES	GOOD
31.710	S-H / CLEAN		NONE		NONE	YES	GOOD
32.950	S-H / CLEAN		OPEN		NONE	YES	GOOD
33.650	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
34.850	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
35.780	S-H / CLEAN		OPEN		NONE	YES	GOOD
36.960	S-H / CLEAN		OPEN		NONE	YES	GOOD
37.140	S-H / PLUGGED		BLOCK	RUSTED	NONE	YES	GOOD
38.820	S-H / PT.COV.		NONE	RUSTED	SLIGHT	YES	GOOD
40.440	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
41.730	S-H / PLUGGED		OPEN		NONE	YES	GOOD
42.010	S-H / PT.COV.		OPEN	RUSTED	MOD.	YES	POOR
44.640	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
45.320	S-H / CLEAN		NONE		NONE	YES	GOOD
46.510	S-H / PT.COV.		OPEN		NONE	YES	GOOD
47.660	S-H / CLEAN		NONE	RUSTED	NONE	YES	POOR
48.840	S-H / CLEAN		OPEN		NONE	YES	GOOD
49.320	S-H / PT.COV.		OPEN		NONE	YES	GOOD
50.820	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
51.740	S-H / CLEAN		OPEN		NONE	YES	GOOD
53.610	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
54.830	S-H / CLEAN		OPEN	RUSTED	NONE	YES	GOOD
55.650	S-H / CLEAN		OPEN		NONE	YES	GOOD
56.870	S-H / COVER.	G	OPEN		NONE	YES	GOOD
57.890	S-H / CLEAN		OPEN		NONE	YES	GOOD
58.950	S-H / CLEAN		OPEN		NONE	YES	GOOD
59.790	S-H / PLUGGED	G/D/V	BLOCK	RUSTED	SLIGHT	YES	GOOD
61.500	S-H / PLUGGED	G/D/V	BLOCK		MOD.	YES	GOOD

CONT'ED

62.600	S-H / PT.COV.	C	OPEN	NONE	YES	GOOD
63.310	S-H / CLEAN		OPEN	NONE	YES	GOOD
64.670	S-H / PLUGGED	G	OPEN	SLIGHT	YES	POOR
65.420	S-H / CLEAN		OPEN	NONE	YES	GOOD
66.970	S-H / PLUGGED	G/D/V	NONE	NONE	YES	GOOD
67.950	S-H / PT.COV.	D	OPEN	SLIGHT	YES	POOR
68.800	S-H / CLEAN		NONE	NONE	YES	GOOD
70.950	S-H / CLEAN		NONE	NONE	YES	GOOD
71.220	S-H / CLEAN		NONE	NONE	YES	GOOD
72.620	S-H / CLEAN		NONE	NONE	YES	GOOD
73.900	S-H / CLEAN		NONE	NONE	YES	GOOD
74.270	S-H / PT.COV.	D+V	NONE	SLIGHT	YES	GOOD
75.930	S-H / CLEAN		NONE	NONE	YES	GOOD

NOTE : COVER MATR --> G=GRAVEL; D=DIRT.; V=VEG.; C=CONCRETE

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = SOUTH
HEADWALL = CLEAN

MILEPOST	OUTLET TYPE/LOC.	SCREEN		SILT.	FLOW	DRAINAGE
16.720	S-H	OPEN	RUSTED	NONE	YES	GOOD
17.870	S-H	OPEN		NONE	YES	GOOD
18.610	S-H	OPEN		NONE	YES	GOOD
23.630	S-H	NONE		NONE	YES	GOOD
30.820	S-H	OPEN		NONE	YES	GOOD
31.710	S-H	NONE		NONE	YES	GOOD
32.950	S-H	OPEN		NONE	YES	GOOD
33.650	S-H	OPEN	RUSTED	NONE	YES	GOOD
34.850	S-H	OPEN	RUSTED	NONE	YES	GOOD
35.780	S-H	OPEN		NONE	YES	GOOD
36.960	S-H	OPEN		NONE	YES	GOOD
40.440	S-H	OPEN	RUSTED	NONE	YES	GOOD
44.640	S-H	OPEN	RUSTED	NONE	YES	GOOD
45.320	S-H	NONE		NONE	YES	GOOD
47.660	S-H	NONE	RUSTED	NONE	YES	POOR
48.840	S-H	OPEN		NONE	YES	GOOD
50.820	S-H	OPEN	RUSTED	NONE	YES	GOOD
51.740	S-H	OPEN		NONE	YES	GOOD
53.610	S-H	OPEN	RUSTED	NONE	YES	GOOD
54.830	S-H	OPEN	RUSTED	NONE	YES	GOOD
55.650	S-H	OPEN		NONE	YES	GOOD
57.890	S-H	OPEN		NONE	YES	GOOD
58.950	S-H	OPEN		NONE	YES	GOOD
63.310	S-H	OPEN		NONE	YES	GOOD
65.420	S-H	OPEN		NONE	YES	GOOD
68.800	S-H	NONE		NONE	YES	GOOD
70.950	S-H	NONE		NONE	YES	GOOD
71.220	S-H	NONE		NONE	YES	GOOD
72.620	S-H	NONE		NONE	YES	GOOD
73.900	S-H	NONE		NONE	YES	GOOD
75.930	S-H	NONE		NONE	YES	GOOD

NUMBER OF CLEAN HEADWALL = 31
% OF CLEAN HEADWALL = 56.4

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = SOUTH
HEADWALL = PT. COVER./COVER.

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN		SILT.	FLOW	DRAINAGE
20.730	S-H	G/D/V	PT.OPEN		SLIGHT	YES	POOR
21.990	S-H	G/D/V	NONE		NONE	YES	GOOD
24.860	S-H	G/D/V	OPEN	RUSTED	SLIGHT	YES	POOR
25.780	S-H	G/D/V	NONE		NONE	YES	GOOD
28.340	S-H	G/D/V	OPEN		SLIGHT	YES	GOOD
29.840	S-H	G/D/V	PT.OPEN	RUSTED	SLIGHT	YES	GOOD
38.820	S-H	G/D/V	NONE	RUSTED	SLIGHT	YES	GOOD
42.010	S-H	G/D/V	OPEN	RUSTED	MOD.	YES	POOR
46.510	S-H	G/D/V	OPEN		NONE	YES	GOOD
49.320	S-H	G/D/V	OPEN		NONE	YES	GOOD
56.870	S-H	G	OPEN		NONE	YES	GOOD
62.600	S-H	C	OPEN		NONE	YES	GOOD
67.950	S-H	D	OPEN		SLIGHT	YES	POOR

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PT.COVERED HEADWALL = 13
% OF PT. COVERED HEADWALL = 23.6
NUMBER OF COVERED HEADWALL = 1
% OF COVERED HEADWALL = 1.8

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991
HEADWALL = PLUGGED

MILEPOST	LOC./ TYPE	COVER MATER.	SCREEN	SILT.	FLOW	DRAINAGE
15.860	S-H	G/D/V NONE		NONE	YES	POOR
19.330	S-H	G/D/V BLOCK		NONE	YES	POOR
22.870	S-H	G/D/V BLOCK		NONE	NO	POOR
26.890	S-H	G/D/V BLOCK	RUSTED	SEV.	NO	GOOD
37.140	S-H	G/D/V BLOCK	RUSTED	NONE	YES	GOOD
41.730	S-H	G/D/V OPEN		NONE	YES	GOOD
59.790	S-H	G/D/V BLOCK	RUSTED	SLIGHT	YES	GOOD
61.500	S-H	G/D/V BLOCK		MOD.	YES	GOOD
64.670	S-H	G OPEN		SLIGHT	YES	POOR
66.970	S-H	G/D/V NONE		NONE	YES	GOOD

NOTE : COVER MATR.--> G=GRAVEL; D= DIRT., V=VEG.; C=CONCRETE
NUMBER OF PLUGGED HEADWALL = 10
% OF PLUGGED HEADWALL = 18.2

******* PAVEMENT SUBDRAIN EVALUATION *******

ROUTE = I-71
DIRECTION = SOUTH
OUTLET = S-H
NO SCREEN/RUSTED

MILEPOST	OUTLET	SCREEN		SILT.	FLOW	DRAINAGE
15.860	PLUGGED	NONE		NONE	YES	POOR
16.720	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
21.990	PT.COVER.	NONE		NONE	YES	GOOD
23.630	CLEAN	NONE		NONE	YES	GOOD
24.860	PT.COVER.	OPEN	RUSTED	SLIGHT	YES	POOR
25.780	PT.COVER.	NONE		NONE	YES	GOOD
26.890	PLUGGED	BLOCK	RUSTED	SEV.	NO	GOOD
29.840	PT.COVER.	PT.OPEN	RUSTED	SLIGHT	YES	GOOD
31.710	CLEAN	NONE		NONE	YES	GOOD
33.650	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
34.850	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
37.140	PLUGGED	BLOCK	RUSTED	NONE	YES	GOOD
38.820	PT.COVER.	NONE	RUSTED	SLIGHT	YES	GOOD
40.440	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
42.010	PT.COVER.	OPEN	RUSTED	MOD.	YES	POOR
44.640	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
45.320	CLEAN	NONE		NONE	YES	GOOD
47.660	CLEAN	NONE	RUSTED	NONE	YES	POOR
50.820	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
53.610	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
54.830	CLEAN	OPEN	RUSTED	NONE	YES	GOOD
59.790	PLUGGED	BLOCK	RUSTED	SLIGHT	YES	GOOD
66.970	PLUGGED	NONE		NONE	YES	GOOD
68.800	CLEAN	NONE		NONE	YES	GOOD
70.950	CLEAN	NONE		NONE	YES	GOOD
71.220	CLEAN	NONE		NONE	YES	GOOD
72.620	CLEAN	NONE		NONE	YES	GOOD
73.900	CLEAN	NONE		NONE	YES	GOOD
74.270	PT.COVER.	NONE		SLIGHT	YES	GOOD
75.930	CLEAN	NONE		NONE	YES	GOOD

NUMBER OF HEADWALL W/ NO OR RUSTED SCREEN = 30
= 54.5
%

******* PAVEMENT SUBDRAIN EVALUATION *******
** ALL INSPECTED OUTLET PIPE **
ROUTE = I-71
DIRECTION = SOUTH
INSP. DATE= JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
15.860	FLEX.	2	5+6					0 % OPEN AT 3.0
16.720	FLEX.	2	5					40-60 % OPEN AT 6.0
17.870	FLEX.	2	2			1		PIPE OPEN
18.610	FLEX.	1	2					PIPE OPEN
19.330	FLEX.	2	2+5					40-60 % OPEN AT 7.0
20.730	FLEX.	1						40-60 % OPEN AT 0.0
21.990	RIGID							PIPE OPEN
22.870	FLEX.	5+6						10-20 % OPEN AT 2.5
23.630	RIGID							PIPE OPEN
24.860	FLEX.		1+5					40-60 % OPEN AT11.0
25.780	FLEX.	6	6					0 % OPEN AT11.0
26.890	FLEX.	5+6						10-20 % OPEN AT 3.0
28.340	FLEX.	2						PIPE OPEN
29.840	FLEX.	2	2+3					40-60 % OPEN AT11.0
30.820	FLEX.	5	5					20-40 % OPEN AT 8.0
31.710	FLEX.	1						PIPE OPEN
32.950	FLEX.		5					20-40 % OPEN AT 7.5
33.650	FLEX.	5	5					0 % OPEN AT 4.0
34.850	FLEX.	1	5+6					10-20 % OPEN AT 8.0
35.780	FLEX.	1	5					20-40 % OPEN AT 6.0
36.960	FLEX.	1+5						40-60 % OPEN AT 2.0
37.140	FLEX.	5						10-20 % OPEN AT 2.0
38.820	FLEX.		5					40-60 % OPEN AT 9.0
40.440	FLEX.		5					10-20 % OPEN AT 4.0
41.730	FLEX.		1+5					40-60 % OPEN AT 5.0
42.010	FLEX.		2+4					80-100% OPEN
44.640	FLEX.	1	3					PIPE OPEN
45.320	FLEX.		2					PIPE OPEN
46.510	FLEX.	1	1					PIPE OPEN
47.660	FLEX.	1	1+3					PIPE OPEN
48.840	FLEX.	1	4					PIPE OPEN
49.320	FLEX.	2				4		PIPE OPEN
50.820	FLEX.	1						40-60 % OPEN AT43.0
51.740	FLEX.	5						40-60 % OPEN AT 2.0
53.610	FLEX.							PIPE OPEN
54.830	FLEX.	4+5	2					PIPE OPEN
55.650	FLEX.	3	3				2	80-100% OPEN
56.870	FLEX.	1+5						PIPE OPEN
57.890	FLEX.		2					PIPE OPEN
58.950	FLEX.	4	1			1		PIPE OPEN
59.790	FLEX.		2					PIPE OPEN
61.500	FLEX.	4						60-80 % OPEN
62.600	FLEX.							40-60 % OPEN AT 0.0
63.310	FLEX.		5					0 % OPEN AT 5.0
64.670	FLEX.	1+5				1		80-100% OPEN
65.420	FLEX.	1+5						60-80 % OPEN

CONT'ED

66.970 FLEX.	1+5	2		80-100% OPEN
67.950 FLEX.		4+5		40-60 % OPEN AT 0.0
68.800 FLEX.	1		2	PIPE OPEN
70.950 FLEX.	5+6+8			PIPE OPEN
71.220 FLEX.	4+5	5		0 % OPEN AT 7.0
72.620 FLEX.		2	3	PIPE OPEN
73.900 FLEX.	5			10-20 % OPEN AT 2.0
74.270 FLEX.	2+4+5	1		PIPE OPEN
75.930 FLEX.			3	PIPE OPEN

NUMBER OF OPEN OUTLET PIPE	=	23
% OF OPEN OUTLET PIPE	=	42
NUMBER OF COMPRESSED/BLOCKED OUTLET PIPE	=	32
% OF COMPRESSED/BLOCKED OUTLET PIPE	=	58

******* PAVEMENT SUBDRAIN EVALUATION *******
** OPEN OUTLET PIPE **
ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
17.870	FLEX.	2	2			1		
18.610	FLEX.	1	2					
21.990	RIGID							
23.630	RIGID							
28.340	FLEX.	2						
31.710	FLEX.	1						
42.010	FLEX.		2+4					80-100% OPEN
44.640	FLEX.	1	3					
45.320	FLEX.		2					
46.510	FLEX.	1	1					
47.660	FLEX.	1	1+3					
48.840	FLEX.	1	4					
49.320	FLEX.	2				4		
53.610	FLEX.							
54.830	FLEX.	4+5	2					
55.650	FLEX.	3	3				2	80-100% OPEN
56.870	FLEX.	1+5						
57.890	FLEX.		2					
58.950	FLEX.	4	1			1		
59.790	FLEX.		2					
64.670	FLEX.	1+5				1		80-100% OPEN
66.970	FLEX.	1+5	2					80-100% OPEN
68.800	FLEX.	1				2		
70.950	FLEX.	5+6+8						
72.620	FLEX.		2			3		
74.270	FLEX.	2+4+5	1					
75.930	FLEX.					3		

NUMBER OF OPEN OUTLET PIPE = 27
% OF OPEN OUTLET PIPE = 49.1

******* PAVEMENT SUBDRAIN EVALUATION *******
* COMPRESSED/BLOCKED OUTLET PIPE *
ROUTE = I-71
DIRECTION = SOUTH
INSP.DATE = JULY 1991

MILEPOST	PIPE TYPE	PIPE CONDITION AT A	B	C	D	E	F	REMARK
15.860	FLEX.	2	5+6					0 % OPEN AT 3.0
16.720	FLEX.	2	5					40-60 % OPEN AT 6.0
19.330	FLEX.	2	2+5					40-60 % OPEN AT 7.0
20.730	FLEX.	1						40-60 % OPEN AT 0.0
22.870	FLEX.	5+6						10-20 % OPEN AT 2.5
24.860	FLEX.		1+5					40-60 % OPEN AT11.0
25.780	FLEX.	6	6					0 % OPEN AT11.0
26.890	FLEX.	5+6						10-20 % OPEN AT 3.0
29.840	FLEX.	2	2+3					40-60 % OPEN AT11.0
30.820	FLEX.	5	5					20-40 % OPEN AT 8.0
32.950	FLEX.		5					20-40 % OPEN AT 7.5
33.650	FLEX.	5	5					0 % OPEN AT 4.0
34.850	FLEX.	1	5+6					10-20 % OPEN AT 8.0
35.780	FLEX.	1	5					20-40 % OPEN AT 6.0
36.960	FLEX.	1+5						40-60 % OPEN AT 2.0
37.140	FLEX.	5						10-20 % OPEN AT 2.0
38.820	FLEX.		5					40-60 % OPEN AT 9.0
40.440	FLEX.		5					10-20 % OPEN AT 4.0
41.730	FLEX.		1+5					40-60 % OPEN AT 5.0
50.820	FLEX.	1						40-60 % OPEN AT43.0
51.740	FLEX.	5						40-60 % OPEN AT 2.0
61.500	FLEX.	4						60-80 % OPEN
62.600	FLEX.							40-60 % OPEN AT 0.0
63.310	FLEX.		5					0 % OPEN AT 5.0
65.420	FLEX.	1+5						60-80 % OPEN
67.950	FLEX.		4+5					40-60 % OPEN AT 0.0
71.220	FLEX.	4+5	5					0 % OPEN AT 7.0
73.900	FLEX.	5						10-20 % OPEN AT 2.0

NUMBER OF BLOCKED/COMPRESSED OUTLET PIPE = 28
% OF BLOCKED/COMPRESSED OUTLET PIPE = 50.9