



DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

SPECIFICATION APPENDICES

CLOSURE PLAN

FOR

INACTIVE WASTE SITE NO'S 915018 A, B, & C

VOLUME 2 OF 2

MARCH 1993

Prepared By

URS Consultants, Inc.

282 Delaware Avenue

Buffalo, New York 14202

LIST OF APPENDICES

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MAR 18 1993

N.Y.S. DEPT. OF
ENVIRONMENTAL CONSERVATION
REGION 9

APPENDIX I

SOIL BORING LOGS

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. CMW-A3

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: BUFFALO DRILLING CO.

BORING LOCATION: FILL AREA A

GROUND WATER:

CAS.

SAMP

CORE

TUBE

GROUND ELEVATION: 545.427 FT

DATE

TIME

LEV

TYPE

TYPE

SS

DATE STARTED: 4/25/91

DIA.

2 IN

DATE FINISHED: 4/26/91

WT.

140 LB

DRILLER: CHARLES NICCOMETZ

FALL

30 IN

GEOLOGIST: MICHAEL GUTMANN

POCKET PENETROMETER READING

REVIEWED BY: DUANE LEHMAN

DEPTH FT	STRATA	SAMPLE					DESCRIPTION				H N C	REMARKS
		NO.	TYPE	BLOWS PER 6"	RECOVERY RCD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS CODE			
2		1	SS	2 2 5 6	70	RED AND RED/BROWN	LOOSE	FILL 6" TOPSOIL WITH GRAVEL & SAND LAYER, SOME CLAY	SM	C	SOME 20-30 MOIST	
5		2	SS	2 4 6 12	60	RED/ BROWN MOTTLED	MEDIUM STIFF	SILTY CLAY TRACE FINE GRAVEL		C	SLIGHTLY MOIST	
		3	SS	14 14 22 24	50	YELLOW BROWN AND GRAY	VERY STIFF	SOME DESICCATION CRACKS		C	MEDIUM PLASTICITY	
		4	SS	12 22 32 40	90		HARD		CL	C		
10		5	SS	11 22 28 32	90					C		
		6	SS	9 22 30 38	80					C		
14		7	SS	13 14 18 21	75		VERY STIFF			C		
15		8	SS	7 11 16 18	95	RED/ BROWN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL		C	MOIST	
		9	SS	5 11 15 14	90					C	MEDIUM PLASTICITY	
20		10	SS	5 7 11 11	90		STIFF		CL	C		
		11	SS	2 4 7 8	95		MEDIUM STIFF			C		
24		12	SS	4 5 7 8	100					C		
25									BOREHOLE COMPLETE AT 24 FEET			
30												
35												

COMMENTS

PROJECT NO.

35246

BORING NO.

CMW-A3

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO.

CMW-82

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: BUFFALO DRILLING CO.

BORING LOCATION: FILL AREA B

GROUND WATER:

CAS

SAMP

CORE

TUBE

GROUND ELEVATION: 583.777 FT

DATE

TIME

LEV

TYPE

TYPE

SS

DATE STARTED: 4/25/91

DIA.

2 IN

DATE FINISHED: 4/29/91

WT

140 lb

DRILLER: CHARLES NICOMETS

FALL

30 IN

GEOLOGIST: MICHAEL GUTMANN

* POCKET PENETROMETER READING

REVIEWED BY: DUANE LEMMERT

DEPTH FT	STATA	SAMPLE				DESCRIPTION				H N V	REMARKS
		NO.	TYPE	BLOWS PER 5"	RECOVERY REC %	COLOR	CONSISTENCY	MATERIAL DESCRIPTION	CLASS USCS		
0.5		1	SS	1 7	60	RED/	MED STIFF	SILT, SOME CLAY, TO SAND		0	SWAG POINTS
				7 5		RED/	MEDIUM	SILTY CLAY		0	MOIST
		2	SS	5 8	70	BROWN	STIFF	TRACE FINE GRAVEL		0	MEDIUM
				22 27		NOTED	VERY	SOME DESICCATION CRACKS		0	PLASTICITY
5		3	SS	18 21	75	GRAY	STIFF		CL	0	SIGHTLY MOIST
				30 36							
		4	SS	11 14	90					0	
				30 30							
10		5	SS	8 17	95					0	
				27 32							
		6	SS	6 12	100	RED/	STIFF	SILTY CLAY		0	
				17 21		RED/		TRACE FINE GRAVEL		0	MOIST
		7	SS	5 10	100					0	
				16 22					CL	0	
15		8	SS	3 6	100					0	MEDIUM
				14 16						0	PLASTICITY
		9	SS	5 8	100					0	
				8 10							
16											
20								BOREHOLE COMPLETE			
								AT 15 FEET			
25											
30											
35											

COMMENTS

PROJECT NO.

35246

BORING NO.

CMW-82

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. 01AW-83

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: BUFFALO DRILLING CO.

BORING LOCATION: FILL AREA A

GROUND WATER:

CAS. SAMP CORE TUBE

GROUND ELEVATION: 577.847 FT

DATE TIME LEV TYPE TYPE SS DIA. 2 IN. WT. 140 LB FALL 30 IN.

DATE STARTED: 4/30/91

DATE FINISHED: 4/30/91

DRILLER: KENNETH HUBER

GEOLOGIST: MICHAEL GUTMANN

* POCKET PENETROMETER READING

REVIEWED BY: DUANE LEHARST

DEPTH FT	STRATA	SAMPLE				DESCRIPTION				M C	REMARKS
		NO.	TYPE	BLOWS PER 5"	RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	SCALE LOGS		
		1	SS	1 2 3 5	75	DARK BROWN TO RED/ BRN	LOOSE ↓ MEDIUM DENSE	FILL THIN (2 IN) TOPSOIL COVER OVER DESTROYED SILTY CLAY, TRACE RED CLAY, SAND AND GRAVEL		0	ROOTS
		2	SS	4 4 5 4	80				ML SOM	0	MEDIUM PLASTIC VERY MOIST
5		3	SS	5 7 12 8	60					0	
		4	SS	2 3 4 2	70					0	
10		5	SS	3 4 7 4	80	BLACK, RED/ BRN	MEDIUM STIFF	POAT ORGANIC SILT WITH DECAYED PLANT MATTER MIXED WITH SILTY CLAY	OM CL	0	MEDIUM PLASTIC IN CLAY SAND
12		6	SS	3 4 5 7	90					0	MOIST
		7	SS	2 3 4 7	100	RED/ BRN	MEDIUM STIFF	SILTY CLAY		0	VERY MOIST
15		8	SS	2 3 4 8	100				CL	0	MEDIUM PLASTICITY
16								BOREHOLE COMPLETE AT 16 FEET			
20											
25											
30											
35											

COMMENTS

PROJECT NO.
BORING NO.

35246.
01AW-83

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. CMW - C1

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: BUFFALO DETL ENG CO.

BORING LOCATION: FILL AREA C

GROUND WATER:

CAS

SAMP

CORE

TUBE

GROUND ELEVATION: 601.039 FT

DATE TIME LEV TYPE

TYPE

SS

DATE STARTED: 5/2/91

DIA.

2 IN

DATE FINISHED: 5/2/91

WT.

140 LB

DRILLER: CHARLES NICOMERI

FALL

30 IN

GEOLOGIST: MICHAEL GUTMANN

* POCKET PENETROMETER READING

REVIEWED BY: DUANE LEWIS

DEPTH FT	STRATA	SAMPLE				DESCRIPTION				H N U	REMARKS
		NO.	TYPE	BLOWS PER 5'	RECOVERY FOOT %	COLOR	CONSISTENCY	MATERIAL DESCRIPTION	SCALE LOGS		
15		1	SS	1 2 4 5	100	BLACK SWFT	MEDIUM	ORGANIC SILT	CL	0	WET, WATER AT SURFACE
4		2	SS	3 5 13 15	75	RED/BRN MOTTLED YLN- BRN GRAY	STIFF	SILTY CLAY TRACE FINE GRAVEL	CL	0	VERY MOIST HIGH PLASTICITY
5		3	SS	8 24 35 51	80	RED/BRN MOTTLED GRAY	HARD	SILTY CLAY TRACE FINE GRAVEL		0	MOIST MEDIUM PLASTICITY
		4	SS	8 13 25 30	80		VERY STIFF	SOME DESICCATION CRACKS		0	
10		5	SS	9 25 37 55	100		HARD			0	
		6	SS	7 11 16 25	100		VERY STIFF		CL	0	SLIGHTLY MOIST
14		7	SS	3 9 15 22	100		STIFF			0	
15		8	SS	5 11 15 19	100	RED/BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL	CL	0	MOIST MEDIUM PLASTICITY
16		9	SS	6 10 15 18	100					0	
20								BOREHOLE COMPLETE AT 18 FEET			
25											
30											
35											

COMMENTS

PROJECT NO.
BORING NO.

35246
CMW - C1

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. DMW-05

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: BUFFALO DRILLING CO.

BORING LOCATION: FILL AREA C

GROUND WATER:

CAS.

SAMP

CORE

TUBE

GROUND ELEVATION: 601.39 FT

DATE

TIME

LEV

TYPE

TYPE

SS

DATE STARTED: 4/30/91

DIA.

2.50

DATE FINISHED: 5/1/91

WT.

140 lb

DRILLER: CHARLES NICCOMETI

FALL

3.00

GEOLOGIST: MICHAEL GUTMANN

* POCKET PENETROMETER READING

REVIEWED BY: DONNE LENHART

DEPTH FT	STRATA	SAMPLE				DESCRIPTION				H N U	REMARKS
		NO	TYPE	BLOWS PER 6"	RECOVERY FOOT %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS CODE		
2		1	SS	3 4 7 7	70	BLACK AND BROWN	MEDIUM DENSE	FILL SANDY SILT, SOME CLAY SOME GRAVEL	SM	C	MUFT
5		2	SS	4 7 12 13	75	RED- BROWN	STIFF	SILTY CLAY		C	SLIGHTLY MUFT
		3	SS	9 15 14 21	65	MULTI GRAY	VERY STIFF	TRACE FINE GRAVEL FEW DESICCATION CRACKS		C	LOW PLASTICITY FEW ROOT STOPS
		4	SS	9 14 21 30	70					C	
10		5	SS	9 15 20 25	60				CL	C	
		6	SS	9 13 20 21	70					C	MUFT
		7	SS	9 13 18 25	90					C	
15		8	SS	12 12 15 24	95					C	
16		9	SS	7 12 14 18	90	RED- BROWN	VERY STIFF	SILTY CLAY		C	SLIGHTLY MUFT
		10	SS	9 13 17 25	90			TRACE FINE GRAVEL		C	
20		11	SS	10 18 23 21	100					C	
		12	SS	10 10 10 13	100		STIFF		CL	C	
25		13	SS	4 7 11 11	100					C	MEDIUM PLASTICITY
		14	SS	7 6 9 13	100					C	
30		15	SS	7 7 10 11	100					C	
		16	SS	W O R 3 4	100	RED- BROWN	SOFT	SILTY CLAY	CL	C	VERY MUFT HIGH PLASTICITY
32								BOREHOLE COMPLETE AT 32 FEET			
35											

COMMENTS

PROJECT NO.

BORING NO.

35246

DMW-05

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. 04W - C6

PROJECT: DUNLOP

SHEET NO. 1 OF 1

CLIENT: DUNLOP

JOB NO.: 35246

BORING CONTRACTOR: ALFALO DRILLING CO.

BORING LOCATION: FILL AREA C

GROUND WATER:

ICAS

SAMP

CORE

TUBE

GROUND ELEVATION: 620.449 FT

DATE

TIME

LEV

TYPE

TYPE

SS

DIA

2 IN

WT.

DATE STARTED: 5/2/91

DATE FINISHED: 5/2/91

DRILLER: CHUCK NICUMETZ

GEOLOGIST: MICHAEL GUTMANN

REVIEWED BY: DUANE LEMARIST

DEPTH FT	STRATA	SAMPLE					DEPOSITION				H N V	REMARKS	
		NO.	TYPE	BLOWS PER 6"		RECOVERY RID %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS CODE			
2		1	SS	10 4	20 6	70	BLACK BROWN	MEDIUM DENSE	FILL SANDY SILT, SOME CLAY BRICK FRAGMENTS & SLAG	SM	0	VERY MOIST	
5		2	SS	5 16	10 22	90	RED/ BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL SOME DESICCATION CRACKS		0	SLIGHTLY MOIST	
		3	SS	7 30	14 50	100	MOTTLED GRAY				0		
		4	SS	12 29	23 4	100		HARD			CL	0	MEDIUM PLASTICITY
10		5	SS	15 29	24 36	90						0	SLIGHTLY MOIST
12		6	SS	8 24	17 35	90		VERY STIFF				0	
15		7	SS	11 22	17 24	100	RED/ BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL		0	MOIST	
		8	SS	6 16	11 23	100					CL	0	
		9	SS	11 14	11 18	100						0	
20									BUREHOLE COMPLETE AT 18 FEET				
25													
30													
35													

COMMENTS

PROJECT NO.

35246

BORING NO.

04W - C6

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT HOLE NO: OMW-1
 JOB NO: 9-1135 DATE COMPLETED: DECEMBER 17, 1982
 CLIENT: DUNLOP TIRE CORPORATION GEOLOGIST/ENGINEER: D. MILLARD
 HOLE TYPE: 6"Ø HOLLOW STEM AUGER GROUND ELEVATION: 591.5
 LOCATION: DUNLOP PROPERTY - SOUTHWEST SECTOR TOP OF PIPE ELEVATION: 593.66

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	
595		593.66 Native				
	FILL dark brown topsoil, some black asphalt	Backfill	1	SS	6	
590	FILL-Mottled brown SILT & CLAY	591.5 Grout			8	
	Brown CLAY, silt f. gravel	Bentonite	2	SS	13	
		Sandpack			37	
	Red brown CLAY & SILT, fine gravel	2"Ø	3	SS	28	
585	Red brown CLAY & SILT, some fine gravel	Black Steel Pipe	4	SS	100+	
			5	SS	32	
					73	
580		579.50	6	SS	35	
					58	
		5.0' Galvanized Well Screen #10 Slot				
575						

☐ GRAIN SIZE ANALYSIS
 ☒ WATER FOUND
 ☒ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT

HOLE NO: _____ CMW-2

JOB NO : 9-1135

DATE COMPLETED: DECEMBER 10, 1982

CLIENT : DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE : 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 585.9

LOCATION : DUNLOP PROPERTY - NORTHWEST SECTOR

TOP OF PIPE ELEVATION: 589.22

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST			
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	BLOWS / FOOT			
						20	40	60	80
590		589.22 Native							
		Backfill							
585	FILL - TOPSOIL RED brown CLAY, silt, f. grav. FILL-Red brown SILT, black clay, wood chips Red brown CLAY, silt	585.9 Grout Bentonite							
580		2"Ø Black Steel Pipe Sand Pack							
575	Red brown SILT, clay, fine gravel	575.6							
570	NOTE: STRATIGRAPHIC DATA FROM BMW-1 LOG	5.0' Galvanized Well Screen #10 Slot							

0

GRAIN SIZE ANALYSIS

WATER FOUND

▽

STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE NO: OMW-3

JOB NO: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 601.5

LOCATION: DUNLOP PROPERTY - SOUTHEAST SECTOR

TOP OF PIPE ELEVATION: 604.27

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
			NUMBER	TYPE	BLOWS / FOOT	
						20 40 60 80
605		604.27 Native				
		Backfill				
		601.5				
		Grout	1	SS	5	
		Bentonite			16	
600	Dark brown TOPSOIL & PEAT, silt, some grav. & grass & root fibers - wet	Sand	2	SS	15	
	Brown SILT, some clay	Pack			21	
	Red br. CLAY & SILT, f. grav.		3	SS	39	
	Red br. CLAY, some si. & f. grav.	2"Ø			83	
595	Red brown CLAY, some gray silty lenses, f. gravel	Black Steel	4	SS	100+	
	Red brown CLAY, some silt & fine gravel	Pipe	5	SS	30	
					57	
590		589.5	6	SS	24	
					42	
		5.0'				
		Galvanized				
		Well				
585		Screen				
		#10 Slot				

○ GRAIN SIZE ANALYSIS

▼ WATER FOUND

▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE NO: OMW-4

JOB NO: 9-1135

DATE COMPLETED: DECEMBER 14, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 608.2

LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.36

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
			NUMBER	TYPE	BLOWS / FOOT	
						20 40 60 80
610		610.36 Native				
		Backfill				
		608.2				
		Grout				
605	FILL black FLY ASH, silt, some clay, rubber, sand & wood - moist-wet	Bentonite				
		2"Ø				
		Black				
		Steel				
		Pipe				
600	Mottled black & green brown SILT, root matter	Sand				
	Red brown SILT, clay	Pack				
	Red brown CLAY, SILT, some f. gravel	599.2				
		5.0" Johnson Galvanized Well Screen # 10 Slot				
595						
	NOTE: STRATIGRAPHIC DATA FROM BMW-2 LOG					
590						



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE NO: BMW-1 Page 2 of 2

JOB NO: 9-1135

DATE COMPLETED: DECEMBER 10, 1982

CLIENT: DUNLOP TIRE CORPORATION

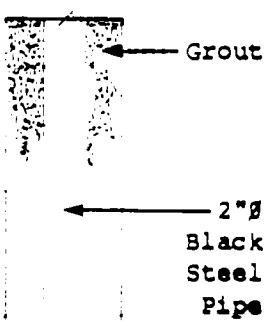
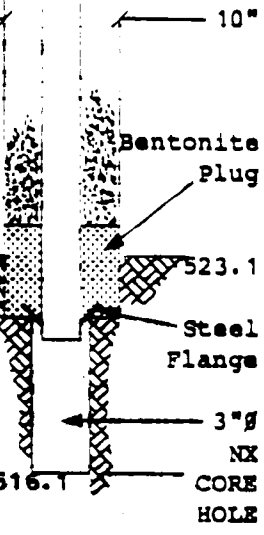
GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10" Ø HOLLOW STEM AUGER

GROUND ELEVATION: 585.6

LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR

TOP OF PIPE ELEVATION: 588.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT				
			NUMBER	TYPE	BLOWS/FOOT		20	40	60	80
550	Red brown CLAY, some gray silty lenses, f. gravel NOT SAMPLED		12	SS	2					
545	Red brown CLAY, some gray silty lenses NOT SAMPLED		13	SS	1					
540	Red brown CLAY, some gray silty lenses NOT SAMPLED		14	SS	WOH					
535	Red brown CLAY, some gray silty lenses NOT SAMPLED		15	SS	WOH					
530	Brown fine SAND & SILT, fine gravel TILL - wet NOT SAMPLED		16	SS	53					
525	Brown fine SAND & SILT, gray shattered rock fragments TILL - wet AUGER REFUSAL 2.0'-5-3/4" Ø ROLLER BIT - NO RECOVERY		17	SS	100+					
520	Very thin bedded gray aphanitic DOLOMITE & white GYPSUM		BMW NX 1	ROCK CORE						
515	Thin bedded gray aphanitic DOLOMITE									

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT
 JOB N° : 9-1135
 CLIENT : DUNLOP TIRE CORPORATION
 HOLE TYPE : 10"Ø HOLLOW STEM AUGER
 LOCATION : DUNLOP PROPERTY - NORTHWEST SECTOR

HOLE N° : BMW-1 Page 1 of 2
 DATE COMPLETED : DECEMBER 10, 1982
 GEOLOGIST/ENGINEER : D. MILLARD
 GROUND ELEVATION : 585.6
 TOP OF PIPE ELEVATION : 588.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
			NUMBER	TYPE	BLOWS / FOOT	
						20 40 60 80
590		588.62 Native Backfill 585.6				
585	FILL - TOPSOIL		1	SS	18	
	Red brown CLAY, silt, f. gravel		2	SS	8	
	FILL-Red brown SILT, black slag, wood chips		3	SS	19	
580	Red brown CLAY, silt		4	SS	100+	
		← Grout	5	SS	22	
	Red brown SILT, clay & fine gravel		6	SS	100+	
575		← 2"Ø Black Steel Pipe	7	SS	40	
	Red brown CLAY, some gray silty lenses, f. gravel		8	SS	10	
570	NOT SAMPLED					
			9	SS	4	
565	Red brown CLAY, some gray silty lenses, f. gravel				6	
	NOT SAMPLED					
560	Red brown CLAY, some gray silty lenses, f. gravel		10	SS	1	
	NOT SAMPLED				4	
555	NO RECOVERY		11	SS	WOH	
	NOT SAMPLED					
550	Red brown CLAY, some gray silty lenses, f. gravel		12	SS	2	

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
 JOB N°: 9-1135
 CLIENT: DUNLOP TIRE CORPORATION
 HOLE TYPE: 10" HOLLOW STEM AUGER
 LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

HOLE N°: BMV-2 Page 1 of 1
 DATE COMPLETED: DECEMBER 17, 1982
 GEOLOGIST/ENGINEER: D. MILLARD
 GROUND ELEVATION: 607.6
 TOP OF PIPE ELEVATION: 610.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
			NUMBER	TYPE	BLOWS / FOOT	
610		610.62 Native Backfill 607.6	1	SS	4	
	FILL-Black FLY ASH, silt, some clay, rubber, sand & wood - moist-wet		2	SS	4	
605			3	SS	14	
			4	SS	6	
600	Mottled black & green brown SILT, root matter Red brown SILT, clay Red brown CLAY, silt, fine gravel	2" Black Steel Pipe	5	SS	15	
			6	SS	19	
595			7	SS	47	
		Grout	8	SS	62	
			9	SS	100+	
590	NOT SAMPLED					
	NO RECOVERY		10	SS	21	
585	NOT SAMPLED					
	Red brown CLAY, some silt & fine gravel		11	SS	35	
580	NOT SAMPLED					
	NO RECOVERY		12	SS	19	
575	NOT SAMPLED					
	Red brown CLAY, some silt lenses		13	SS	6	
570	NOT SAMPLED					

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT

HOLE N^o: BMW-2 Page 2 of 3

JOB N^o: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT : DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE : 10"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 607.6

LOCATION : NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
			NUMBER	TYPE	BLOWS / FOOT	
						20 40 60 80
570	NOT SAMPLED		14	SS	3	
	Red brown CLAY, silt, fine gravel lenses					
565	NOT SAMPLED		15	SS	4	
	Red brown CLAY, silt, fine gravel lenses					
560	NOT SAMPLED		16	SS	4	
	Red brown CLAY, silt, fine gravel lenses					
555	NOT SAMPLED		17	SS	3	
	Red brown CLAY, silt, fine gravel lenses					
550	NOT SAMPLED		18	SS	13	
	Red brown CLAY, silt lenses, fine gravel					
545	Red brown SAND & SILT, rock fragments & gravel, some clay TILL		19	SS	77	
	NOT SAMPLED					
540	Red brown SAND & SILT, rock fragments, some clay, TILL - wet					
535						



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
 JOB #: 9-1135
 CLIENT: DUNLOP TIRE CORPORATION
 HOLE TYPE: 10"Ø HOLLOW STEM AUGER
 LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

HOLE NO: BMW-2 Page 3 of 3
 DATE COMPLETED: DECEMBER 17, 1982
 GEOLOGIST/ENGINEER: D. MILLARD
 GROUND ELEVATION: 607.6
 TOP OF PIPE ELEVATION: 610.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT			
			NUMBER	TYPE	BLOWS / FOOT				
						20	40	60	80
540	NOT SAMPLED								
	AUGER REFUSAL								
535	3'-5-3/4"Ø ROLLER BIT MINIMAL RESISTANCE CONTINUED TO AUGER								
	AUGER REFUSAL								
	2.5'-of 5-3/4"Ø ROLLER BIT								
530	Very thin bedded gray aphanitic DOLOMITE, & white gypsum		BMW	NX					
			2	ROCK					
				NX					
				CORE					
				HOLE					
525									
520									

APPENDIX II

MONITORING WELL CONSTRUCTION DETAILS

DRILLING SUMMARY

Geologist:

Michael Gutmann

Drilling Company:

Buffalo Drilling Co.

Driller:

Charles Nicometi

Date:

4/26/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-14'	Dessicated Silty Clay
14-24'	Silty Clay

WELL DESIGN

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Elevation 598.217 ft.

Elevation 595.427 ft.

Protective casing and lockable cap

Ground Level

AUGERHOLE

7.5 inch dia.

22 feet length

3 ft.

5 ft.

16.75 ft.

21.75 ft.

22 ft.

WELL RISER

2 inch dia.

19.5 feet length

WELL SCREEN

2 inch dia.

5 feet length

CASING MATERIAL

Surface: Steel

Monitor: Stainless Steel

SCREEN MATERIALType: Stainless Steel
Type 304

Slot Size: .010 in.

SEAL MATERIALSeal #1 Type: Bentonite Pellets
Setting: 3 - 5 ft.Seal #2 Type: None
Setting:**FILTER MATERIAL**

Type: #2 Q Rok

Setting: 5 - 22 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack

Client: Dunlop Tire Corp.

Project: Dunlop Tire Corp.

Project No.: 35246.

URS
Consultants, Inc.**Monitoring Well**
Construction Details**Well Number:**
OMW-A3

DRILLING SUMMARY		
Geologist: Michael Gutmann		
Drilling Company: Buffalo Drilling Co.		
Driller: Charles Nicometi		
Date: 4/29/91		
GEOLOGIC LOG		
depth(ft.)	lithology	
0-.5'	Topsoil	
.5-10'	Dessicated Silty Clay	
10-18'	Silty Clay	
WELL DESIGN		
CASING MATERIAL Surface: Steel Monitor: Stainless Steel	SCREEN MATERIAL Type: Stainless Steel Type 304 Slot Size: .010 in.	SEAL MATERIAL Seal #1 Type: Bentonite Pellets Setting: 8.5 - 10.5 ft. Seal #2 Type: None Setting:
FILTER MATERIAL Type: #2 Q Rok Setting: 8.5 - 16 ft.	ROCK CORING Cored Interval: None Core Diameter: None Reamed Diameter: None	LEGEND <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black; margin-right: 5px;"></div> Cement/Bentonite Grout </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> <div style="width: 20px; height: 10px; background-color: black; border: 1px solid black; margin-right: 5px;"></div> Bentonite Seal </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-color: white; border: 1px solid black; margin-right: 5px;"></div> Silica Sandpack </div>
Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-B2

Protective casing and lockable cap

Elevation 586.727 ft.

Elevation 583.777 ft.

6.5 ft.

8.5 ft.

10.5 ft.

15.5 ft.

16 ft.

Ground Level

AUGERHOLE

7.5 inch dia.

16 feet length

WELL RISER

2 inch dia.

13.5 feet length

WELL SCREEN

2 inch dia.

5 feet length

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DRILLING SUMMARY**Geologist:**

Michael Gutmann

Drilling Company:

Buffalo Drilling Co.

Driller:

Charles Nicometi

Date:

4/30/91

GEOLOGIC LOG**depth(ft.)** **Lithology**

0-8

Fill

8-12

Peat

12-16

Silty Clay

WELL DESIGND
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Elevation 580.577 ft.

Elevation 577.847 ft.

Protective casing and lockable cap

Ground Level

AUGERHOLE

7.5 inch dia.

15 feet length

4 ft.

6 ft.

9.5 ft.

14.5 ft.

15 ft.

WELL RISER

2 inch dia.

12.2 feet length

WELL SCREEN

2 inch dia.

5 feet length

CASING MATERIAL

Surface: Steel

Monitor: Stainless Steel

SCREEN MATERIALType: Stainless Steel
Type 304

Slot Size: .010 in.

SEAL MATERIALSeal #1 Type: Bentonite Pellets
Setting: 4 - 6 ft.Seal #2 Type: None
Setting:**FILTER MATERIAL**

Type: #2 Q Rok

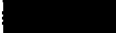
Setting: 6 - 15 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND Cement/Bentonite Grout Bentonite Seal Silica Sandpack**Client:** Dunlop Tire Corp.**Project:** Dunlop Tire Corp.**Project No.:** 35246.**URS**
Consultants, Inc.**Monitoring Well**
Construction Details**Well Number:**
OMW-B3

DRILLING SUMMARY

Geologist:
Michael Gutmann

Drilling Company:
Buffalo Drilling Co.




Driller:
Charles Nicometi

Date:
5/2/91

GEOLOGIC LOG

depth(ft.)	lithology
0-.5'	Organic Silt
.5-4'	Silty Clay
4-14'	Dessicated Silty Clay
14-18'	Silty Clay

WELL DESIGN

<i>CASING MATERIAL</i>		<i>SCREEN MATERIAL</i>	<i>SEAL MATERIAL</i>
Surface:	Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 3 - 5 ft.
Monitor:	Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:
<i>FILTER MATERIAL</i>		<i>ROCK CORING</i>	<i>LEGEND</i>
Type:	#2 Q Rok	Cored Interval: None	 Cement/Bentonite Grout
Setting:	5 - 17.5 ft.	Core Diameter: None	 Bentonite Seal
		Reamed Diameter: None	 Silica Sandpack
Client:	Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.		Monitoring Well Construction Details	Well Number: OMW-C1

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Elevation 603.839 ft.

Elevation 601.039 ft.

Protective casing and lockable cap

Ground Level

AUGERHOLE

7.5 inch dia.
17.5 feet length

3 ft.

5 ft.

7 ft.

WELL RISER

2 inch dia.
9.8 feet length

WELL SCREEN

2 inch dia.
10 feet length

17 ft.

17.5 ft.

DRILLING SUMMARY																													
Geologist: Michael Gutmann																													
Drilling Company: Buffalo Drilling Co.																													
Driller: Charles Nicometi																													
Date: 5/1/91																													
GEOLOGIC LOG																													
depth(ft.)	lithology																												
0-2'	Fill																												
2-16'	Dessicated Silty Clay																												
16-30'	Very Stiff Silty Clay																												
30-32'	Soft Silty Clay																												
WELL DESIGN																													
<table border="1"> <tr> <td>CASING MATERIAL</td> <td>SCREEN MATERIAL</td> <td>SEAL MATERIAL</td> </tr> <tr> <td>Surface: Steel</td> <td>Type: Stainless Steel Type 304</td> <td>Seal #1 Type: Bentonite Pellets Setting: 10.25 - 12.5 ft.</td> </tr> <tr> <td>Monitor: Stainless Steel</td> <td>Slot Size: .010 in.</td> <td>Seal #2 Type: None Setting:</td> </tr> <tr> <td>FILTER MATERIAL</td> <td>ROCK CORING</td> <td>LEGEND</td> </tr> <tr> <td>Type: #2 Q Rok</td> <td>Cored Interval: None</td> <td> Cement/Bentonite Grout</td> </tr> <tr> <td>Setting: 12.5 - 30 ft.</td> <td>Core Diameter: None</td> <td> Bentonite Seal</td> </tr> <tr> <td></td> <td>Reamed Diameter: None</td> <td> Silica Sandpack</td> </tr> <tr> <td>Client: Dunlop Tire Corp.</td> <td>Project: Dunlop Tire Corp.</td> <td>Project No.: 35246.</td> </tr> <tr> <td>URS Consultants, Inc.</td> <td>Monitoring Well Construction Details</td> <td>Well Number: OMW-C5</td> </tr> </table>			CASING MATERIAL	SCREEN MATERIAL	SEAL MATERIAL	Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 10.25 - 12.5 ft.	Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:	FILTER MATERIAL	ROCK CORING	LEGEND	Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout	Setting: 12.5 - 30 ft.	Core Diameter: None	Bentonite Seal		Reamed Diameter: None	Silica Sandpack	Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.	URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-C5
CASING MATERIAL	SCREEN MATERIAL	SEAL MATERIAL																											
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 10.25 - 12.5 ft.																											
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:																											
FILTER MATERIAL	ROCK CORING	LEGEND																											
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout																											
Setting: 12.5 - 30 ft.	Core Diameter: None	Bentonite Seal																											
	Reamed Diameter: None	Silica Sandpack																											
Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.																											
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-C5																											

DRILLING SUMMARY

Geologist:
Michael Gutmann

Drilling Company:
Buffalo Drilling Co.

Driller:
Charles Nicometi

Date:
5/2/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-12'	Dessicated Silty Clay
12-18'	Silty Clay

WELL DESIGN**CASING MATERIAL**

Surface: Steel

Monitor: Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel
Type 304

Slot Size: .010 in.

SEAL MATERIAL

Seal #1 Type: Bentonite Pellets
Setting: 3 - 4.5 ft.

Seal #2 Type: None
Setting:

FILTER MATERIAL

Type: #2 Q Rok

Setting: 4.5 - 17 ft.

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

 Cement/Bentonite Grout

 Bentonite Seal

 Silica Sandpack

Client: Dunlop Tire Corp.

Project: Dunlop Tire Corp.

Project No.: 35246.

U R S
Consultants, Inc.

Monitoring Well
Construction Details

Well Number:
OMW-C6

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Elevation 602.999 ft.

Elevation 600.449 ft.

Protective casing and lockable cap

Ground Level

AUGERHOLE

7.5 inch dia.

17 feet length

3 ft.

4.5 ft.

6.75 ft.

16.75 ft.

17 ft.

WELL RISER

2 inch dia.

9.3 feet length

WELL SCREEN

2 inch dia.

10 feet length

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE NO: BMW-1 Page 1 of 2

JOB NO: 9-1135

DATE COMPLETED: DECEMBER 10, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 585.6

LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR

TOP OF PIPE ELEVATION: 588.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
			NUMBER	TYPE	BLOWS / FOOT	
590		588.62 Native Backfill 585.6				
585	FILL - TOPSOIL		1	SS	18	
	Red brown CLAY, silt, f. gravel		2	SS	8	
	FILL-Red brown SILT, black slag, wood chips		3	SS	19	
580	Red brown CLAY, silt				33	
		← Grout	4	SS	100+	
			5	SS	22	
	Red brown SILT, clay & fine gravel				70	
575			6	SS	100+	
					100+	
	Red brown CLAY, some gray silty lenses, f. gravel	← 2"Ø Black Steel Pipe	7	SS	40	
					46	
570			8	SS	10	
	NOT SAMPLED				16	
			9	SS	4	
565	Red brown CLAY, some gray silty lenses, f. gravel				6	
	NOT SAMPLED					
			10	SS	1	
560	Red brown CLAY, some gray silty lenses, f. gravel				4	
	NOT SAMPLED					
555	NO RECOVERY		11	SS	WOH	
	NOT SAMPLED					
550	Red brown CLAY, some gray silty lenses, f. gravel		12	SS	2	



GRAIN SIZE ANALYSIS



WATER FOUND

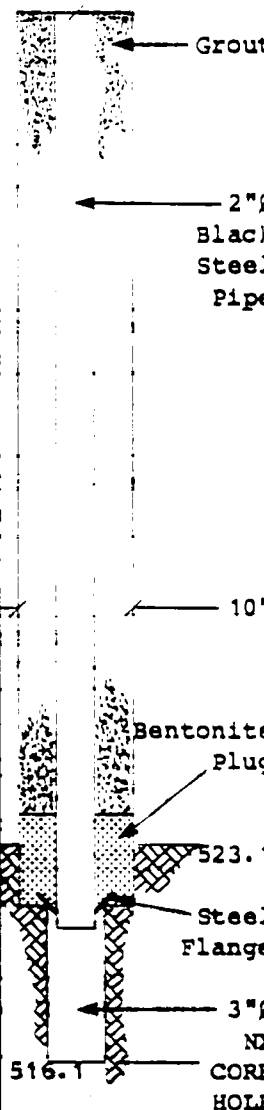
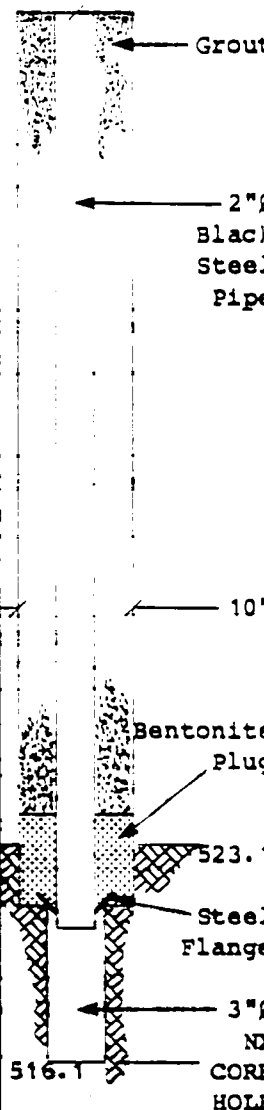


STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
 JOB #: 9-1135
 CLIENT: DUNLOP TIRE CORPORATION
 HOLE TYPE: 10" Ø HOLLOW STEM AUGER
 LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR

HOLE #: BMW-1 Page 2 of 2
 DATE COMPLETED: DECEMBER 10, 1982
 GEOLOGIST/ENGINEER: D. MILLARD
 GROUND ELEVATION: 585.6
 TOP OF PIPE ELEVATION: 588.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT			
			NUMBER	TYPE	BLOWS / FOOT		20	40	60
550	Red brown CLAY, some gray silty lenses, f. gravel NOT SAMPLED		12	SS	2				
545	Red brown CLAY, some gray silty lenses NOT SAMPLED		13	SS	1				
540	Red brown CLAY, some gray silty lenses NOT SAMPLED		14	SS	WOH				
535	Red brown CLAY, some gray silty lenses NOT SAMPLED		15	SS	WOH				
530	Brown fine SAND & SILT, fine gravel TILL - wet NOT SAMPLED		16	SS	53				
525	Brown fine SAND & SILT, gray shattered rock fragments TILL - wet AUGER REFUSAL 2.0'-5-3/4" Ø ROLLER BIT - NO RECOVERY		17	SS	100+				
520	Very thin bedded gray aphanitic DOLOMITE & white GYPSUM Thin bedded gray aphanitic DOLOMITE		BMW NX 1	ROCK CORE					
515									

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE N°: BMW-2 Page 1 of 3

JOB N°: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 607.6

LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.62

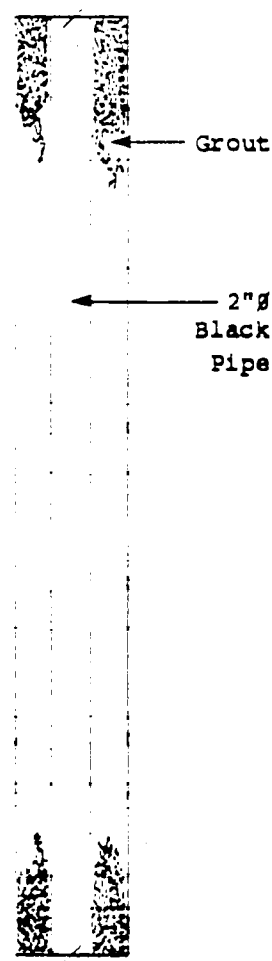
PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	
610		610.62 Native Backfill 607.6	1	SS	4	
	FILL-Black FLY ASH, silt, some clay, rubber, sand & wood - moist-wet		2	SS	4	
605			3	SS	14	
			4	SS	6	
600	Mottled black & green brown SILT, root matter	2"Ø Black Steel Pipe	5	SS	15	
	Red brown SILT, clay		6	SS	19	
	Red brown CLAY, silt, fine gravel		7	SS	47	
595			8	SS	62	
		Grout	9	SS	100+	
590	NOT SAMPLED		10	SS	21	
	NO RECOVERY					
585	NOT SAMPLED		11	SS	35	
	Red brown CLAY, some silt & fine gravel		12	SS	19	
580	NOT SAMPLED					
	NO RECOVERY					
575	NOT SAMPLED		13	SS	6	
	Red brown CLAY, some silt lenses					
570	NOT SAMPLED					

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
 JOB N°: 9-1135
 CLIENT: DUNLOP TIRE CORPORATION
 HOLE TYPE: 10"Ø HOLLOW STEM AUGER
 LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

HOLE N°: BMW-2 Page 2 of 3
 DATE COMPLETED: DECEMBER 17, 1982
 GEOLOGIST/ENGINEER: D. MILLARD
 GROUND ELEVATION: 607.6
 TOP OF PIPE ELEVATION: 610.62

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT			
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT				
						20	40	60	80
570	NOT SAMPLED		14	SS	3				
	Red brown CLAY, silt, fine gravel lenses								
565	NOT SAMPLED		15	SS	4				
	Red brown CLAY, silt, fine gravel lenses								
560	NOT SAMPLED		16	SS	4				
	Red brown CLAY, silt, fine gravel lenses								
555	NOT SAMPLED		17	SS	3				
	Red brown CLAY, silt, fine gravel lenses								
550	NOT SAMPLED		18	SS	13				
	Red brown CLAY, silt lenses, fine gravel								
545	Red brown SAND & SILT, rock fragments & gravel, some clay TILL		19	SS	77				
	NOT SAMPLED								
540	Red brown SAND & SILT, rock fragments, some clay, TILL - wet								
535									

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE N°: BMW-2 Page 3 of 3

JOB N°: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 607.6

LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.62

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT			
			NUMBER	TYPE	BLOWS / FOOT				
						20	40	60	80
540	NOT SAMPLED	<p>2"Ø BLACK STEEL PIPE BENTONITE PELLETS 533.4 STEEL FLANGE 3"Ø NX CORE HOLE 525.9</p>	BMW	NX					
	AUGER REFUSAL								
535	3'-5-3/4"Ø ROLLER BIT MINIMAL RESISTANCE CONTINUED TO AUGER								
	AUGER REFUSAL								
	2.5'-of 5-3/4"Ø ROLLER BIT								
530	Very thin bedded gray aphanitic DOLOMITE, & white gypsum								
525									
520									



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE NO: OMW-1

JOB NO: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

SOLE TYPE: 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 591.5

LOCATION: DUNLOP PROPERTY - SOUTHWEST SECTOR

TOP OF PIPE ELEVATION: 593.66

DEPTH (ELEVATION)	PROFILE STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
			NUMBER	TYPE	BLOWS / FOOT	
595		593.66 Native				
	FILL dark brown topsoil, some black asphalt	Backfill	1	SS	6	
590	FILL-Mottled brown SILT & CLAY Brown CLAY, silt f. gravel	591.5 Grout			8	
		Bentonite	2	SS	13	
		Sandpack			37	
	Red brown CLAY & SILT, fine gravel		3	SS	28	
		2"Ø			77	
585	Red brown CLAY & SILT, some fine gravel	Black Steel Pipe	4	SS	100+	
			5	SS	32	
					73	
580		579.50	6	SS	35	
					58	
		5.0' Galvanized Well Screen #10 Slot				
575						



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE N^o: OMW-2

JOB N^o: 9-1135

DATE COMPLETED: DECEMBER 10, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 585.9

LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR

TOP OF PIPE ELEVATION: 589.22

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	
						20 40 60 80
590		589.22 Native Backfill				
585	FILL - TOPSOIL RED brown CLAY, silt, f. grav. FILL-Red brown SILT, black clay, wood chips Red brown CLAY, silt	585.9 Grout Bentonite				
580		2"Ø Black Steel Pipe Sand Pack				
575	Red brown SILT, clay, fine gravel	575.6				
570	NOTE: STRATIGRAPHIC DATA FROM BMW-1 LOG	5.0' Galvanized Well Screen #10 Slot				



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT

HOLE N° : OMW-3

JOB N° : 9-1135

DATE COMPLETED : DECEMBER 17, 1982

CLIENT : DUNLOP TIRE CORPORATION

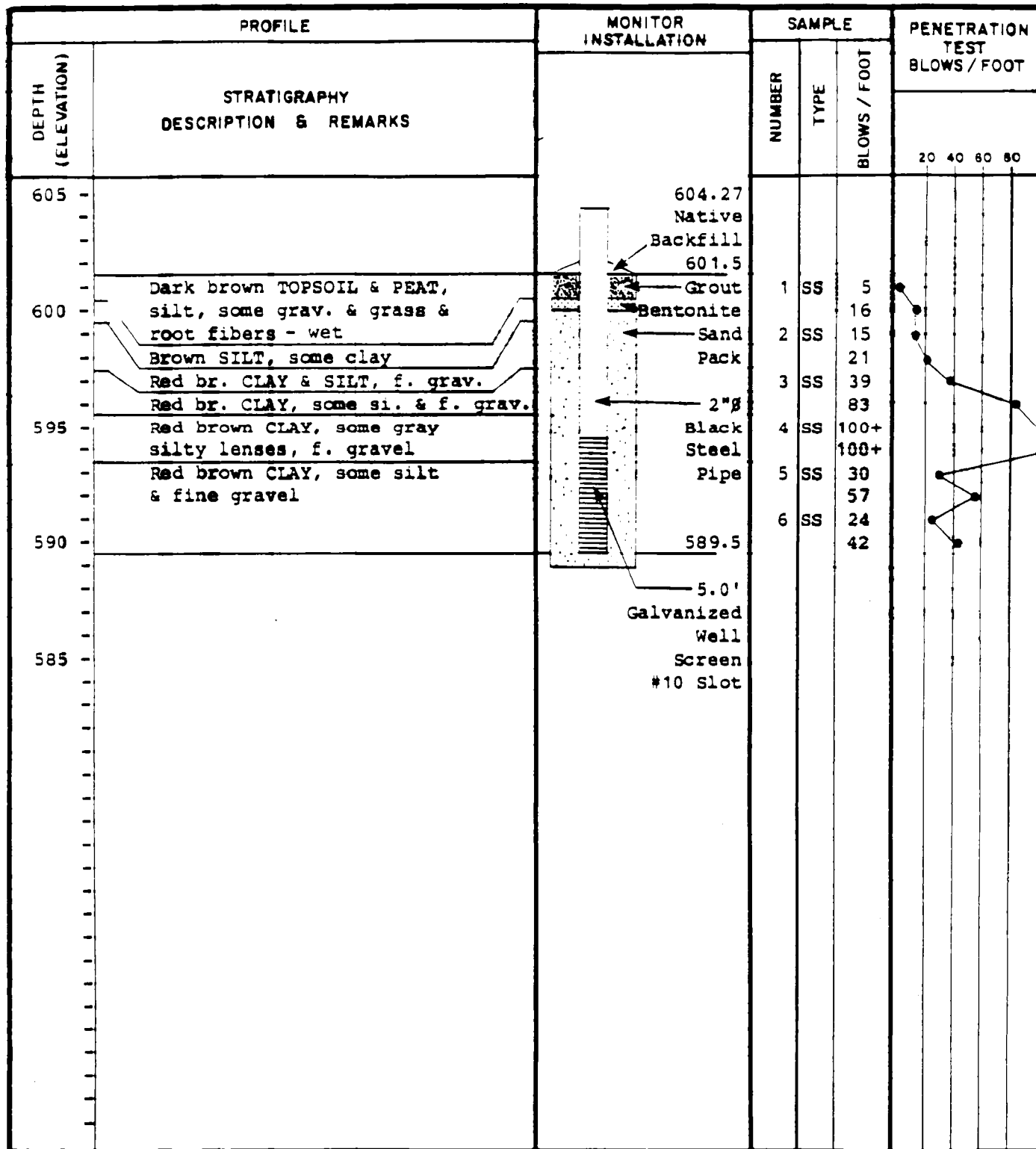
GEOLOGIST/ENGINEER : D. MILLARD

HOLE TYPE : 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION : 601.5

LOCATION : DUNLOP PROPERTY - SOUTHEAST SECTOR

TOP OF PIPE ELEVATION : 604.27



○ GRAIN SIZE ANALYSIS

▼ WATER FOUND

▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT

HOLE N^o: OMW-4

JOB N^o: 9-1135

DATE COMPLETED: DECEMBER 14, 1982

CLIENT : DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE : 6"Ø HOLLOW STEM AUGER

GROUND ELEVATION: 608.2

LOCATION : NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.36

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS/FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	
610 -		610.36 Native				
		Backfill				
		608.2				
		Grout				
605 -	FILL black FLY ASH, silt, some clay, rubber, sand & wood - moist-wet	Bentonite				
		2"Ø				
		Black				
		Steel				
		Pipe				
600 -	Mottled black & green brown SILT, root matter	Sand				
	Red brown SILT, clay	Pack				
	Red brown CLAY, SILT, some f. gravel	599.2				
		5.0" Johnson Galvanized Well Screen # 10 Slot				
595 -						
	NOTE: STRATIGRAPHIC DATA FROM BMW-2 LOG					
590 -						



GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL

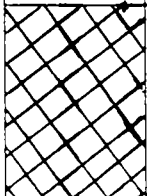
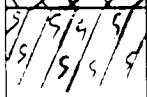
APPENDIX III

TEST TRENCH/TEST PIT LOGS

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/6/91	Elevation:	
Date Completed:	5/6/91	Sheet	1 of 1
Pit Number:	TP - A1	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	N/A

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	MIXTURE OF ASH, CARBON BLACK, AND SLAG IN
	-	A SILT MATRIX
	-	
	-2-	
	-	SILTY CLAY
	-	RED/BROWN, STEEP
	-	
	-4-	
	-6-	

FILL INCLUDES:

General: SILT MATRIX WITH CARBON BLACK, ASH, AND SLAG

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/7/91	Elevation:	
Date Completed:	5/7/91	Sheet	1 of 1
Pit Number:	TP - A2	Pit Max. Depth:	5 FT
		Approx. Water Table Depth:	N/A

SECTION	DEPTH	DESCRIPTION
	-0-	TOPSOIL - SILT, SOME ROOTS
	-	REWORKED SILTY CLAY
	-	RED/BROWN, STIFF
	-2-	
	-	
	-	
	-	BLACK FILL - CARBON BLACK, SILT, TR. SLAG, WOODY REFUSE
	-	SILTY CLAY
	-4-	MOTTLED YLW/BRN AND GRAY
	-	RED/BRN, STIFF
	-	
	-	
	-6-	

FILL INCLUDES:

General:

SILT, CARBON BLACK, TRACE SLAG

Metal Objects:

SLAG

Drums:

NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N. Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP

Date Started: 5/7/91

Sheet 1 of 1

Date Completed: 5/7/91

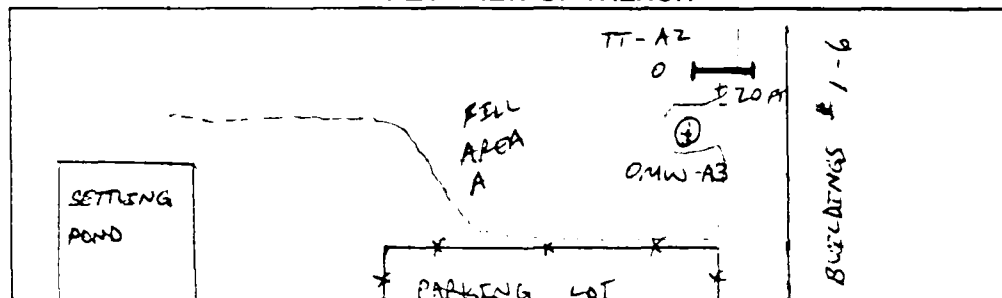
Trench Number: TT-A2

Trench Max. Depth: ~ 3.5 FT

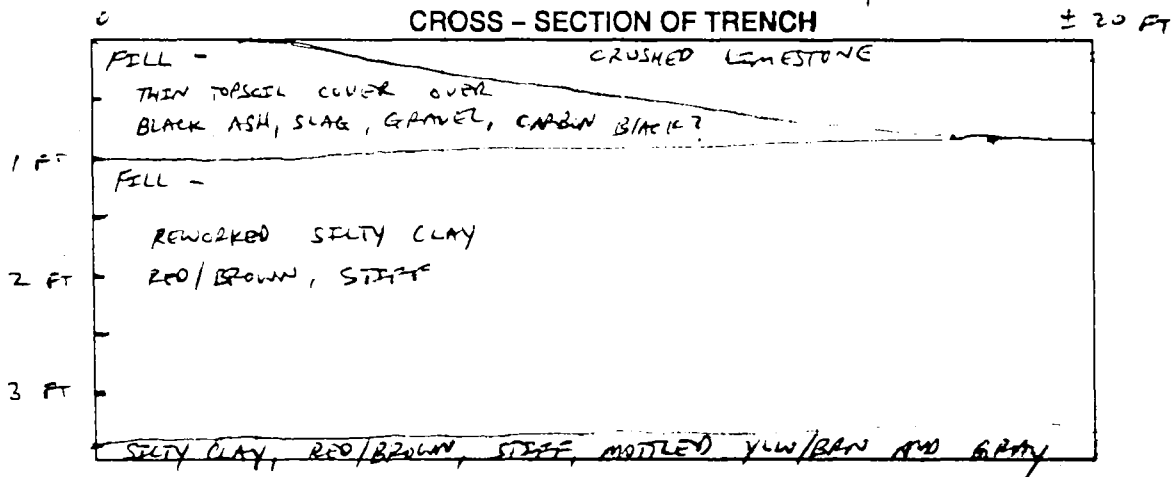
SECTION	DEPTH (FT)	DESCRIPTION
X	-0-	FILL - THIN TOPSOIL COVER OVER
	-	BLACK ASH, SLAG, GRAVEL, CARBON BLACK?
X	-1-	REWORKED SILTY CLAY
	-2-	RED/BROWN, STIFF
S/S/S	-3.5-	SILTY CLAY,
	-4-	RED/BROWN, MOTTLED YLW/BRN & GRAY
	-	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



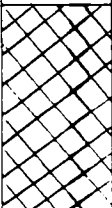
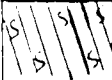
Geologist: MICHAEL GUTMANN

Operator: WALTER GREENER

URS CONSULTANTS, INC.

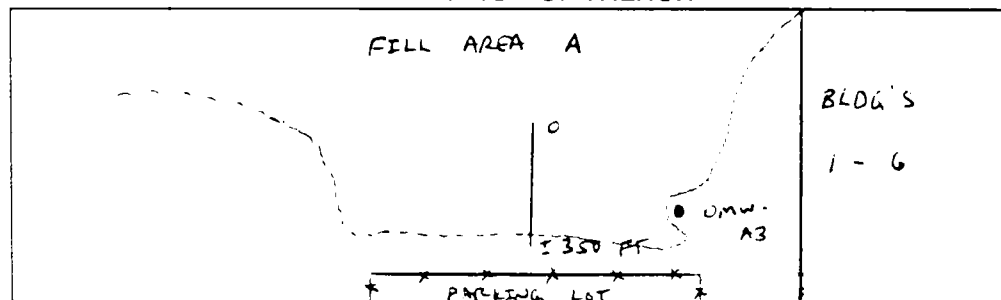
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: Dunlop	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/6/91
Trench Number: TT-A3	Trench Max. Depth: ~ 4 FT

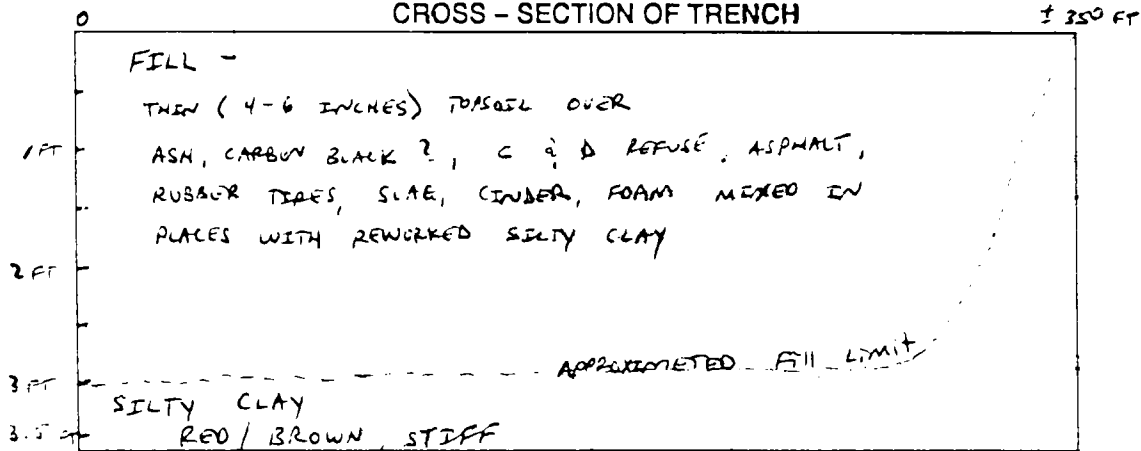
SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-1-	THEN (4-6 INCHES) TOPSOIL OVER
	-2-	ASH, CARBON BLACK?, C & D REFUSE, ASPHALT, RUBBER TIRES, SLAG, CINDER, FOAM MIXED IN PLACES WITH REWORKED SILTY CLAY
	-3-	
	-4-	SILTY CLAY
	-5-	RED/BROWN, STIFF
	-6-	
	-7-	

Comments: WATER ENTERING TRENCH ALONG FILL / SILTY CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP

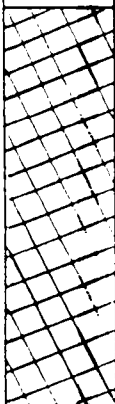
Date Started: 5/7/91

Sheet 1 of 1

Date Completed: 5/7/91

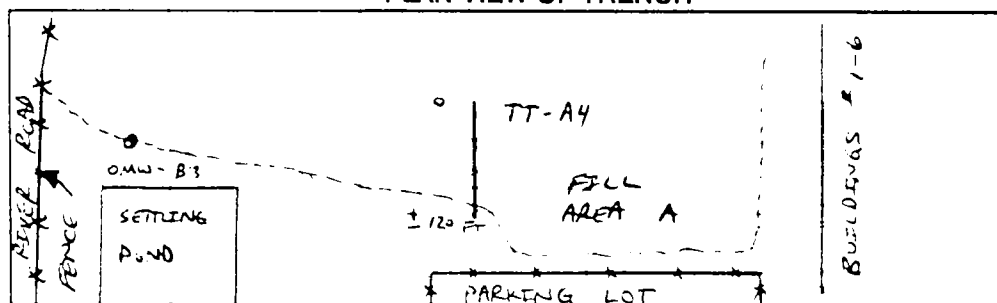
Trench Number: TT-A4

Trench Max. Depth: ~ 3.5 ft

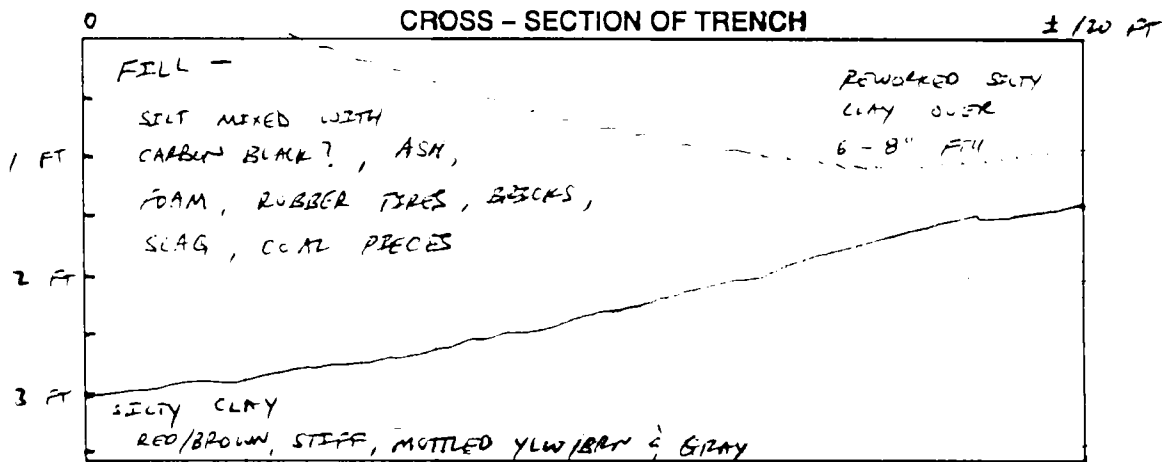
SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-1-	SILT MIXED WITH CARBON BLACK?, ASH, FOAM, RUBBER TIRES, BRICKS, SLAG, COAL PIECES
	-2-	
	-3-	
	-3-	SEITY CLAY, RED/BROWN, STIFF, MOTTLED YLW/BRN & GRAY

Comments: THICK OIL SHEEN ON SURFACE OF WATER ENTERING TRENCH
ALONG FILL/CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH




Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

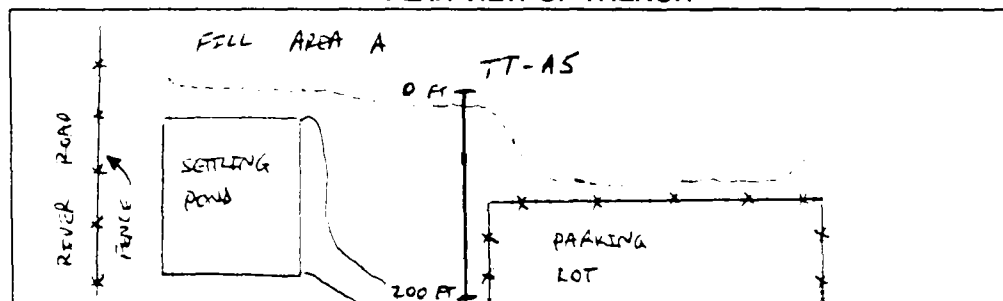
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/7/91
Trench Number: TT-A5	Trench Max. Depth: ~4 FT

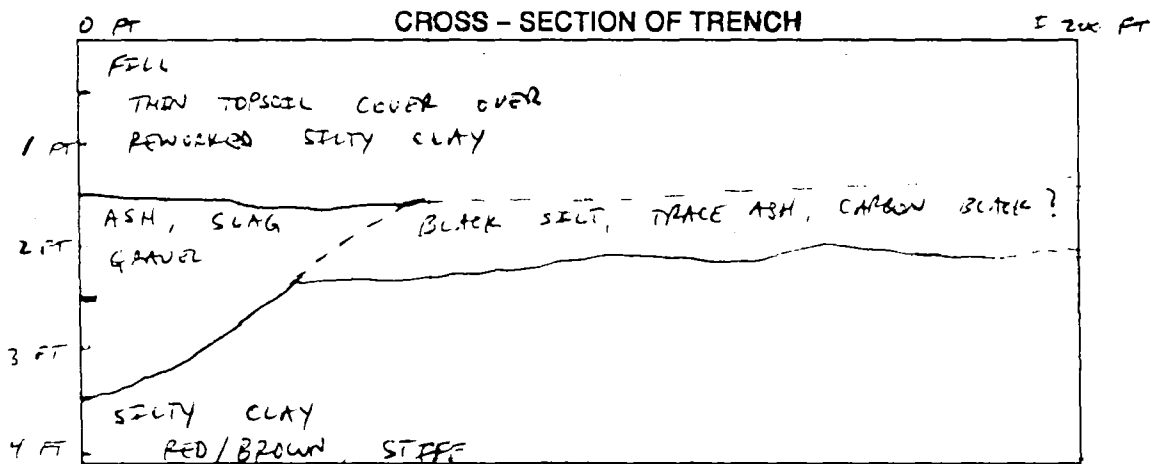
SECTION	DEPTH	DESCRIPTION
	-0-	FILL,
	-1-	THEN TOPSOIL COVER OVER
	-2-	REWORKED SILTY CLAY TO ~ 1.5 FT DEPTH OVER
	-3-	ASH, SLAG, AND GRAVEL
15/5/5	-4-	SILTY CLAY
	-5-	RED/BROWN, MOTTLED GRAY, STEFF
	-6-	
	-7-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP

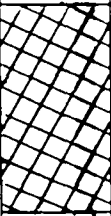
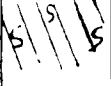
Date Started: 5/7/91

Sheet 1 of 1

Date Completed: 5/7/91

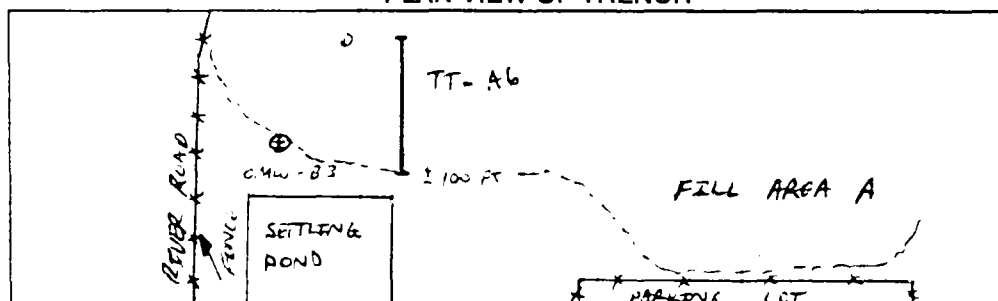
Trench Number: TT-A6

Trench Max. Depth: ~ 4 ft

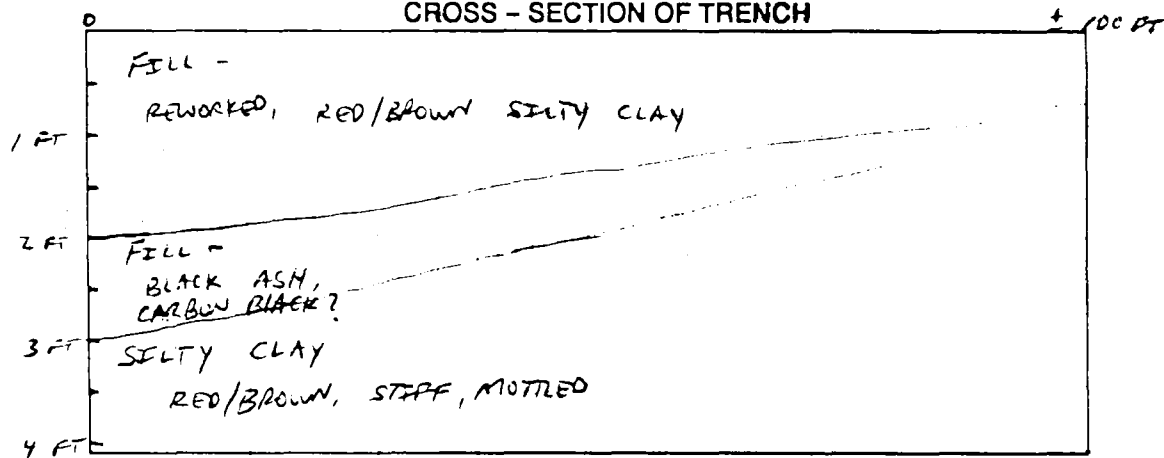
SECTION	DEPTH	DESCRIPTION
	-0-	FILL
	-1-	~ 2 FT REWORKED, RED/BROWN SILTY CLAY, OVER
	-2-	~ 1 FT ASH, CARBON BLACK?, COAL PIECES
	-3-	
	-3-	SILTY CLAY
	-4-	RED/BROWN, STIFF
	-5-	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANNA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP



Date Started: 5/6/91

Sheet 1 of 1

Date Completed: 5/6/91

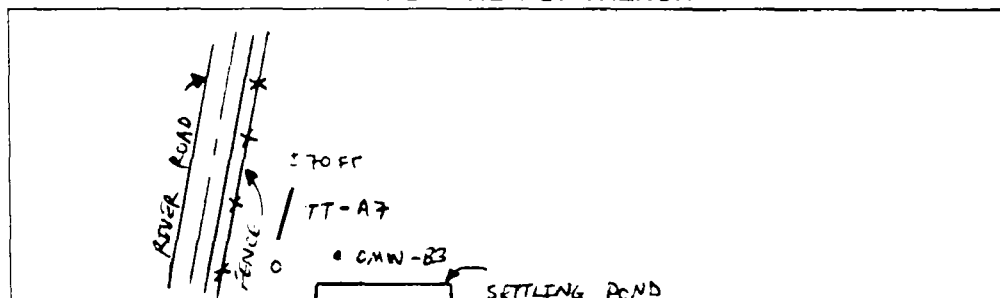
Trench Number: TT - A7

Trench Max. Depth: ~ 5 FT

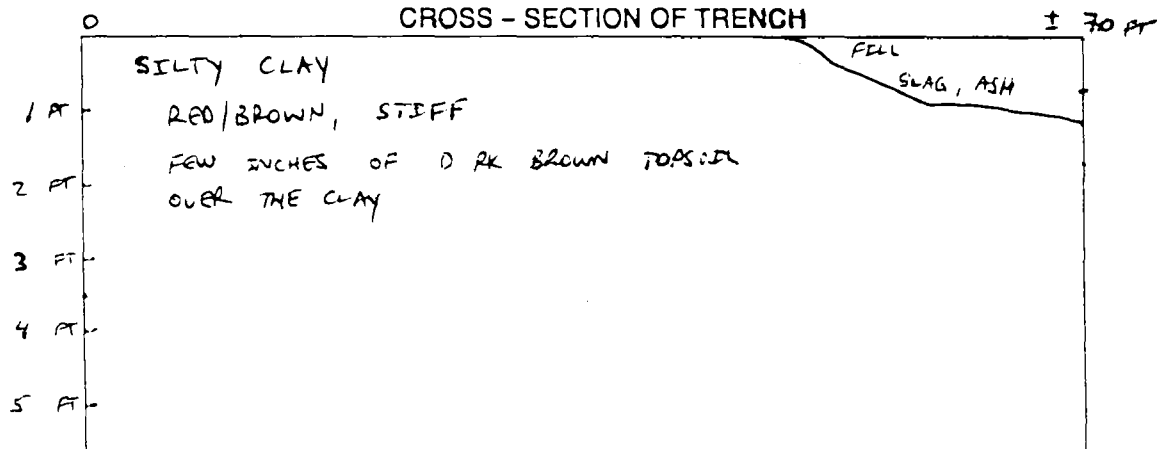
SECTION	DEPTH	DESCRIPTION
	-0-	FILL
	-1-	SILT MATRIX WITH SLAG AND ASH
	-1-	SILTY CLAY
	-2-	RED/BROWN, STIFF
	-3-	TRACE GRAVEL
	-4-	
	-5-	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREYNER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP

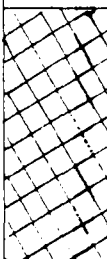
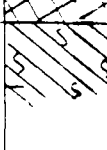
Date Started: 5/6/91

Sheet 1 of 1

Date Completed: 5/6/91

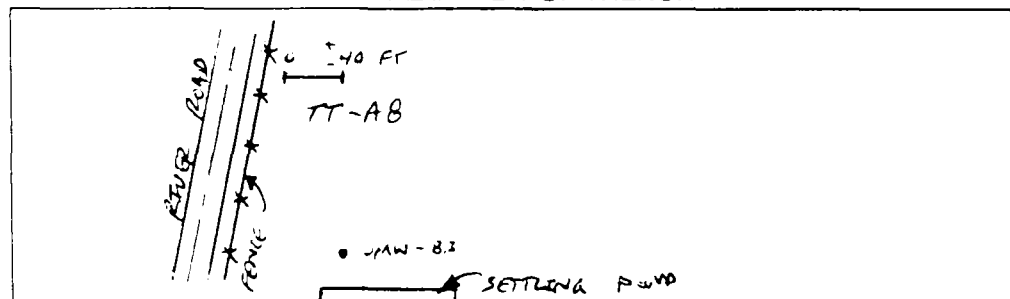
Trench Number: TT-AB

Trench Max. Depth: ~ 2.5 FT

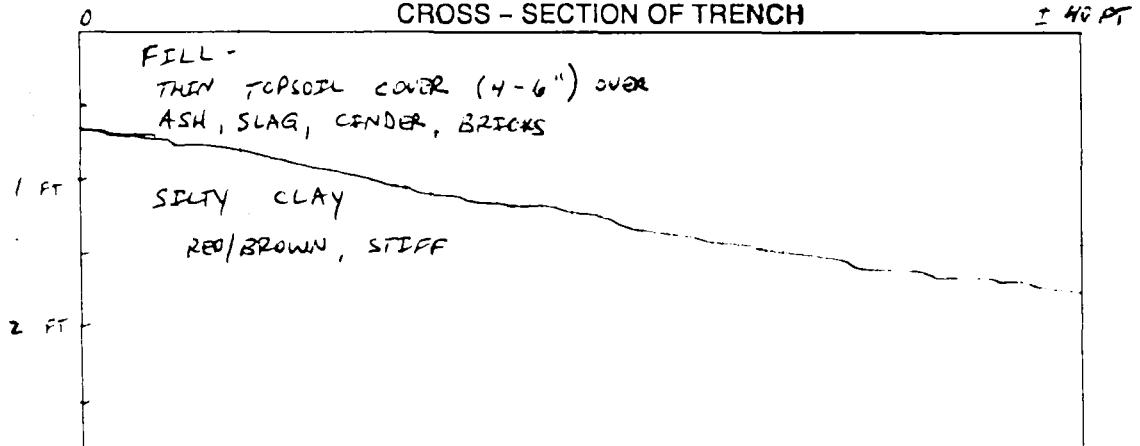
SECTION	DEPTH	DESCRIPTION
	-0-	FILL - THEN TOPSOIL COVER (4-6") OVER ASH, SLAG, CINDER, BRICKS
	-	
	-	
	-	
	-1-	
	-2-	SILTY CLAY RED/BROWN, STIFF
	-	
	-	
	-	
	-3-	

Comments: WATER ENTERING TRENCH ALONG FILL / SILTY CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



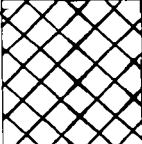
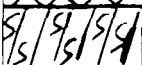
Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B1	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	BLACK ASH, CARBON BLACK, SLAG, BRICKS
	-	
	-	
	-	
	-2-	SILTY CLAY
	-	RED / BROWN
	-	
	-	
	-4-	
	-	
	-6-	

FILL INCLUDES:

General: ASH, CARBON BLACK, SLAG, BRICKS

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.


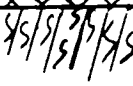
Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B2	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	SLAG, SOME ASH, CARBON BLACK, FEW BRICKS
	-	
	-	
	-1.75'	
	-	SILTY CLAY
	-2-	RED/BROWN
	-	
	-	
	-	
	-	
	-4-	
	-	
	-	
	-6-	

FILL INCLUDES:

General: SLAG, ASH, CARBON BLACK, BRICKS

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.


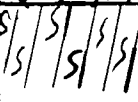
Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B3	Pit Max. Depth:	~ 2.25 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	ASH, CARBON BLACK, FEW BRICKS < 10% SIFT MATRIX
	-	SLAG
	-	
	-	
	1.5	
	-2-	SILTY CLAY
	-	RED / BROWN
	-	
	-	
	-	
	-4-	
	-	
	-	
	-6-	

FILL INCLUDES:

General:

ASH, CARBON BLACK, FEW BRICKS, SLAG

Metal Objects:

SLAG

Drums:

NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B4	Pit Max. Depth:	2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
2 3 2	-0-	THIN SELTY TOPSOIL COVER (6"), OVER,
5/5/5/5/5	-	REWORKED RED/BROWN SELTY CLAY TO 1.5 FT
5/5/5/5/5	1.5	
5/5/5/5/5	-2-	SELY CLAY
	-	RED/BROWN
	-	
	-	
	-4-	
	-	
	-	
	-	
	-6-	

FILL INCLUDES:

General: NONE ENCOUNTERED

Metal Objects: NONE

Drums: NONE

COMMENTS:
CLAY TEST PIT - NO FILL

Geologist: Michael Gutmann Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - 85	Pit Max. Depth:	3 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
S ~ S	-0-	THIN SILTY TOPSOIL COVER (6")
S/S/S/S	-	REWORKED SILTY CLAY
S/S/S/S	-	RED/BROWN
S/S/S/S	-2-	
S/S/S/S	-	
S/S/S/S	-3-	
	-4-	
	-	
	-	
	-6-	

FILL INCLUDES:

General: NONE ENCOUNTERED

Metal Objects: NONE

Drums: NONE

COMMENTS:

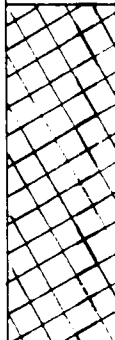
CLEAN TEST PIT - NO FILL

Geologist: Michael Gutmann Operator: Walter Greiner

URS CONSULTANTS, INC.

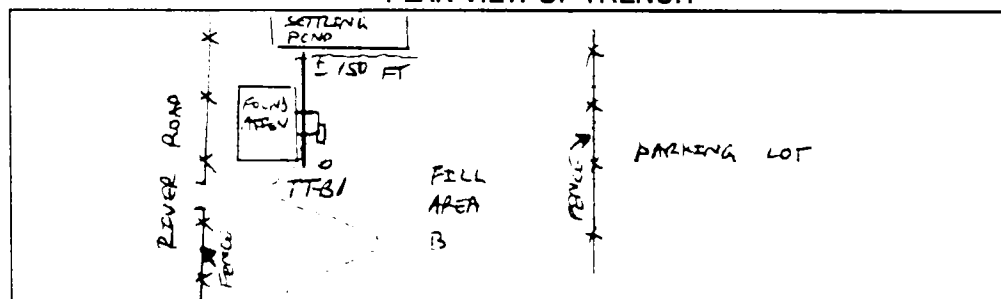
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y. Client: DUNLOP TIRE CORP.
 Project Number: 35246 Contractor: BUFFALO DRILLING CO.
 Project: DUNLOP Date Started: 5/8/91
 Sheet 1 of 1 Date Completed: 5/8/91
 Trench Number: TT-81 Trench Max. Depth: ~ 5 FT

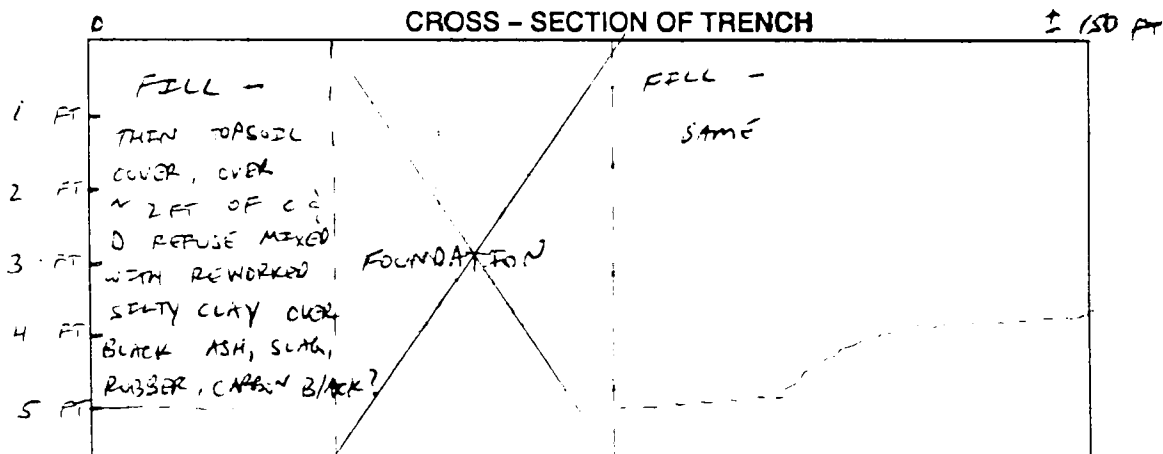
SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	THIN TOPSOIL COVER OVER
	-	~ 2 FT OF C & D REFUSE MIXED WITH REWORKED SILTY CLAY OVER
	-2-	BLACK ASH, SLAG, CARBON BLACK, RUBBER TIRES
	-	
	-	
	-4-	
	-	
	-5-	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH





Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

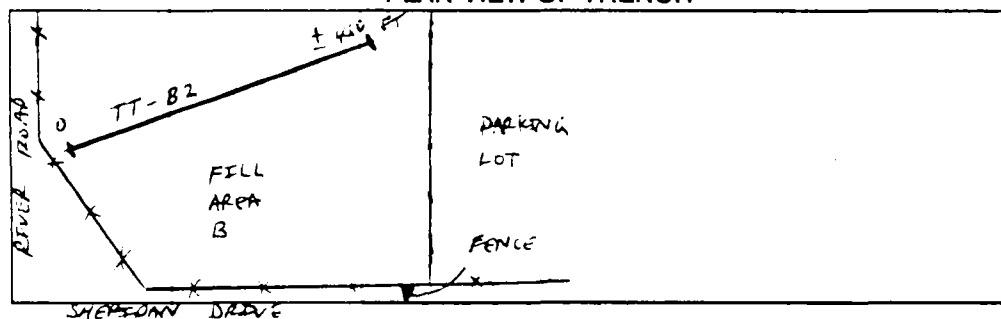
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B2	Trench Max. Depth: ~ 3.5 FT

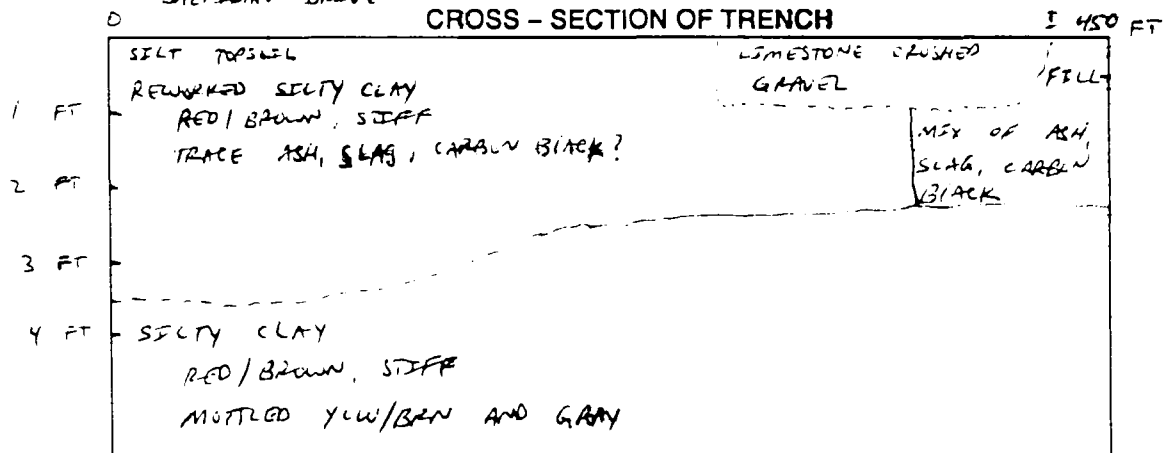
SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-1-	REWORKED SILTY CLAY, RED/BROWN, STIFF
	-2-	MIXTURE OF SLAG, ASH, CARBON BLACK?
	-2.5	
	-3-	SILTY CLAY
	-4-	RED/BROWN, STIFF, MOTTLED YLW/BRN
	-5-	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: Dunlop


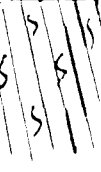
Date Started: 5/8/91

Sheet: of 1

Date Completed: 5/18/91

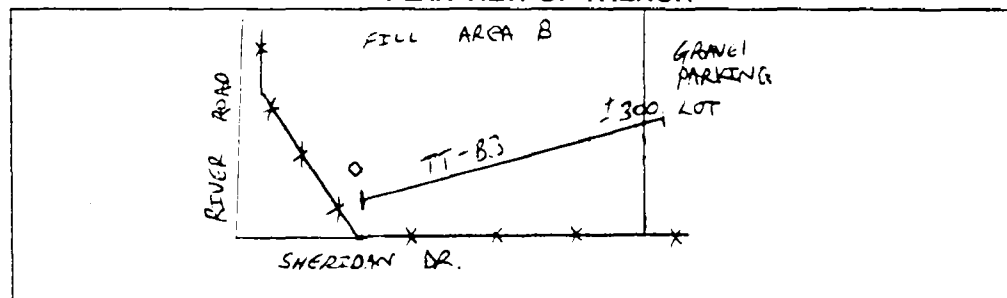
Trench Number: TT-B3

Trench Max. Depth: 5 FT

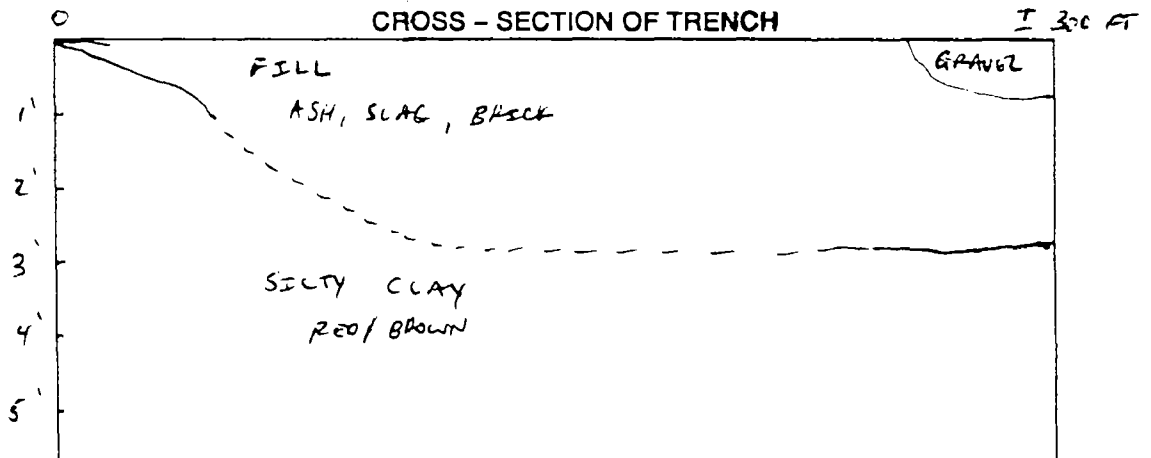
SECTION	DEPTH	DESCRIPTION
	-0-	FILL - SILTY CLAY COVER OVER ASH, BRICK, AND SLAG
	-1-	
	-2-	
	-3-	
	-4-	SILTY CLAY RED/BROWN, STIFF
	-5-	
	-6-	
	-7-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WILTER GREENER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP


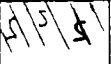
Date Started: 5/8/91

Sheet : of 1

Date Completed: 5/8/91

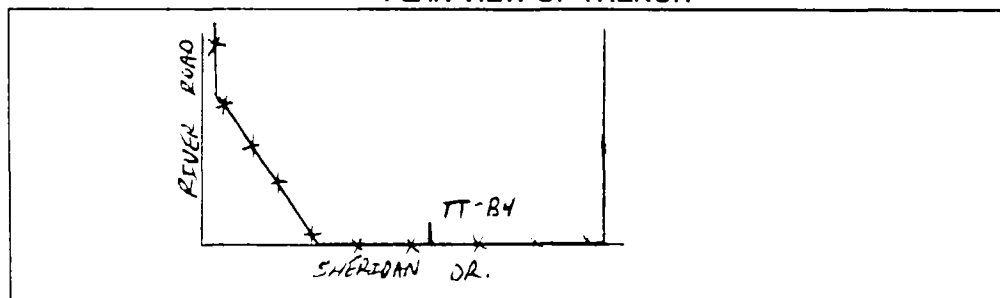
Trench Number: TT-B4

Trench Max. Depth: ~ 2 FT

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	THIN (FEW IN.) SILTY TOPSOIL COVER OVER
	-	BLACK ASH, CARBON BLACK ?
	-1-	
	-1.5	
	-	SILTY CLAY
	-2-	RED/BROWN, STEEP
	-	
	-	
	-3-	

Comments: TEST PIT LOCATED NEXT TO FENCE ALONG SHERIDAN DRIVE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH

NA



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

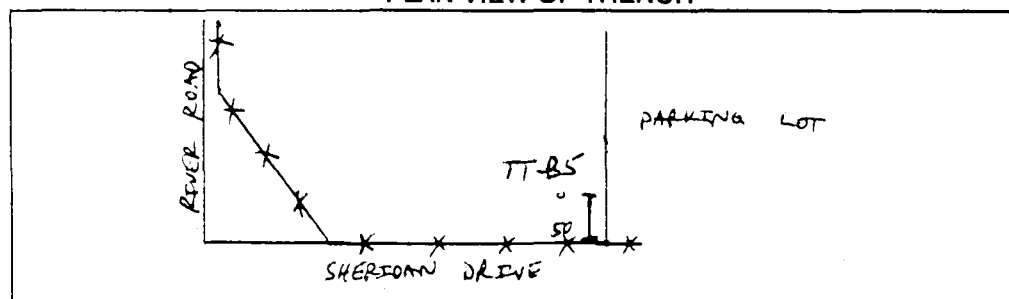
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B5	Trench Max. Depth: ~ 2.5 FT

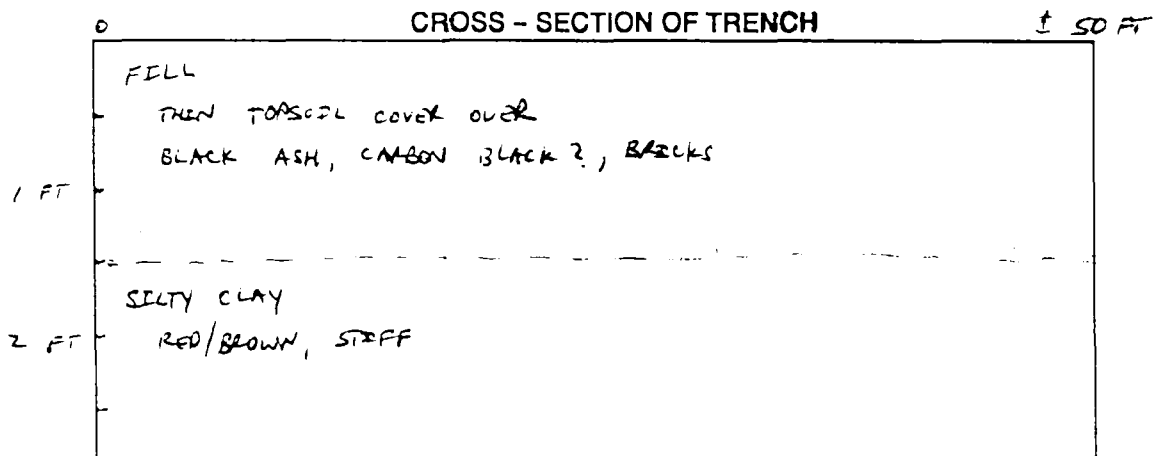
SECTION	DEPTH	DESCRIPTION
	-0-	FILL - THEN TOPSOIL COVER OVER BLACK ASH, CARBON BLACK?, BRICKS
	-	
	-	
	-1-	
	-	SILTY CLAY RED/BROWN, STIFF
	-	
	-2-	
	-	
	-3-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



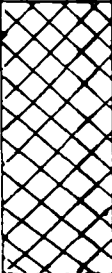
Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

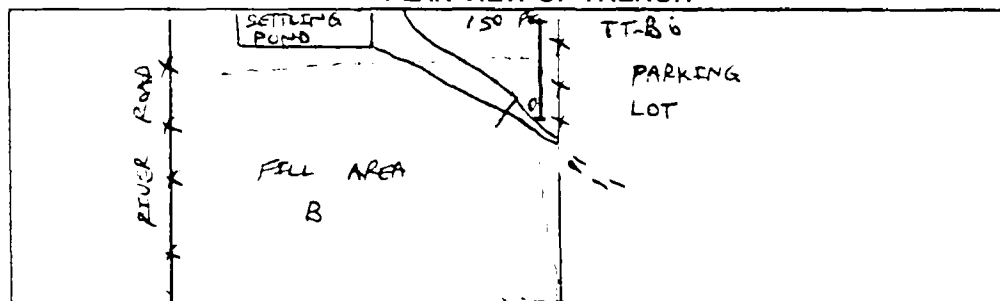
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B6	Trench Max. Depth: ~ 4 FT

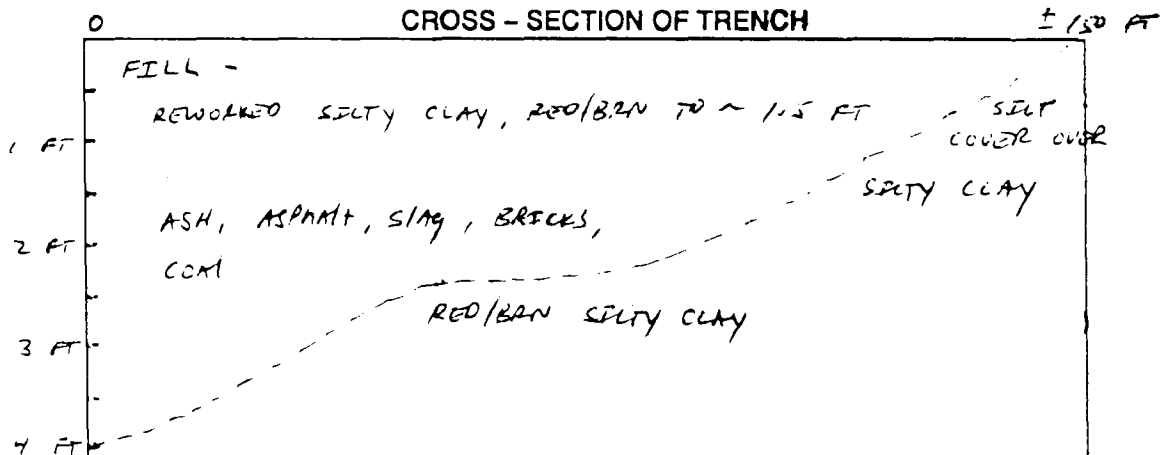
SECTION	DEPTH	DESCRIPTION
	-0-	FILL
	-	REWORKED SILTY CLAY, RED/BROWN TO ~ 1.5 FT
	-2-	ASH, ASPHALT, SLAG, BRICKS,
	-	COAL
	-4-	
	-	
	-	
	-	
	-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH




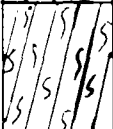
Geologist: MICHAEL GUTMANN

Operator: WALTER GROENER

URS CONSULTANTS, INC.

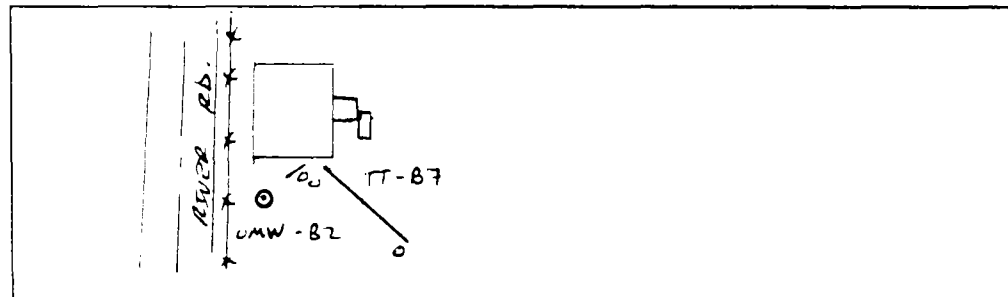
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B7	Trench Max. Depth: ~ 2.5 FT

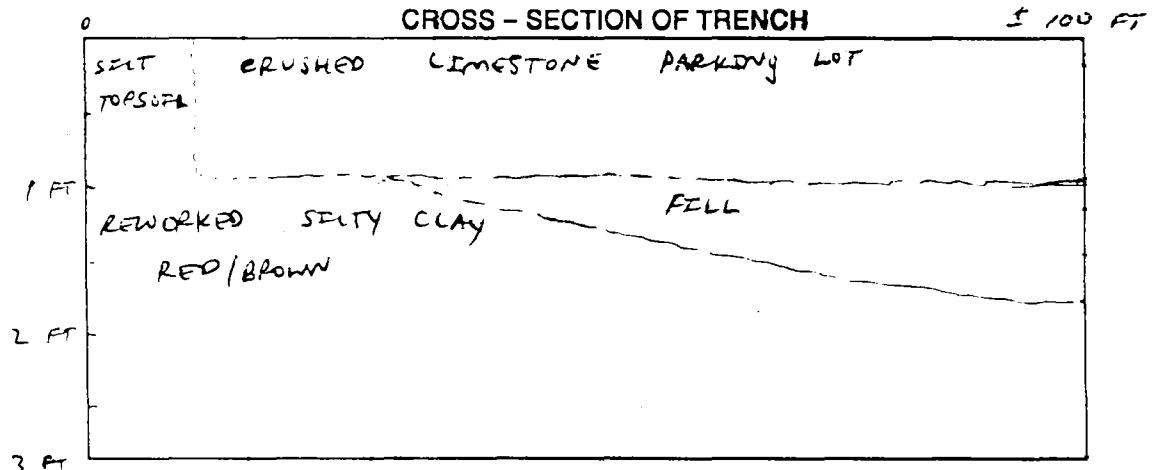
SECTION	DEPTH	DESCRIPTION
	-0-	CRUSHED LIMESTONE GRAVEL PARKING LOT
	-1-	FILL - SOME SLAG, ASH, AND CARBON BLACK
	-2-	REWORKED SILTY CLAY RED/BROWN
	-3-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER
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URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP - C1	Pit Max. Depth:	~ 2 ft
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	TOPSOIL, SILT, ROOTS
	.25	REWORKED SILTY CLAY
	-	RED/BROWN
	-	
	-2-	
	-	
	-	
	-4-	
	-	
	-6-	

FILL INCLUDES:

General: CLEAN TEST PIT → JUST REGRADED SURFACE

Metal Objects: NONE

Drums: NONE

COMMENTS:
NO FILL ENCOUNTERED

Geologist: Michael Gutmann Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP - C 2	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
S ~ S ~	-0-	TOPSOIL - SILT, ROCKS, TRACE SAND AND C & D REFUSE
	.5	SILTY CLAY RED/BAN
	-	
	-	
	-	
	-	
	-2-	
	-	
	-	
	-	
	-	
	-4-	
	-	
	-	
	-	
	-	
	-6-	

FILL INCLUDES:

General: TRACE C & D (FEW IN.)

Metal Objects: NONE

Drums: NONE

COMMENTS:
NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP - C3	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
S ~ S	-0-	TOPSOIL - SILT, TRACE ROOTS
S/S/S/S	-	SILTY CLAY
S/S/S/S	-	RED/BROWN
S/S/S/S	-2-	-----
	-	
	-	
	-4-	
	-	
	-	
	-6-	

FILL INCLUDES:

General: NONE

Metal Objects: NONE

Drums: NONE

COMMENTS:
NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann	Operator: Walter Greiner
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URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP-C4	Pit Max. Depth:	~ 2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
S ~ S ~ S	-0-	TOPSIDE, SILT (DARK BROWN)
S/S/S/S/S	-	SILTY CLAY
S/S/S/S/S	-	RED/BRN
S/S/S/S/S	-	
	-2-	
	-	
	-	
	-	
	-	
	-4-	
	-	
	-	
	-	
	-	
	-6-	

FILL INCLUDES:	
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General: *NONE*

Metal Objects: NONE

Drums: *NONE*

COMMENTS:

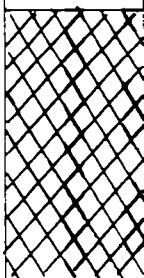
NO HMU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner
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URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP-C5	Pit Max. Depth:	~ 3 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	BLACK, MOIST, SILT MATRIX WITH SAND,
	-	RUBBER TIRE PIECES, BRICK
	-	FRAGMENTS AND C & D MATERIAL
	-2-	
	-	
	-	
	-4-	
	-	
	-6-	

FILL INCLUDES:

General: RUBBER TIRE PIECES, BRICKS, C & D MATERIAL

Metal Objects: NONE

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

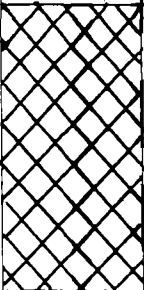
Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP - C6	Pit Max. Depth:	~ 3 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL -
	-	BLACK TO BROWN SANDY SILT MATRIX, WITH
	-	BRICKS AND C & D MATERIAL
	-	
	-2-	
	-	
	-	
	-4-	
	-	
	-6-	

FILL INCLUDES:

General: BRICKS, SLAG, C & D MATERIAL

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann

Operator: Walter Greiner

URS CONSULTANTS, INC.

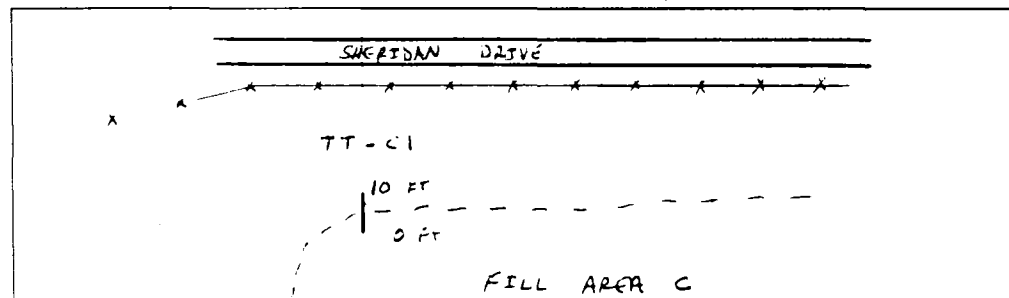
TEST TRENCH LOG

Site: DUNLOP TIRE CORP. TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: Dunlop	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT - C1	Trench Max. Depth: ~ 3 FT

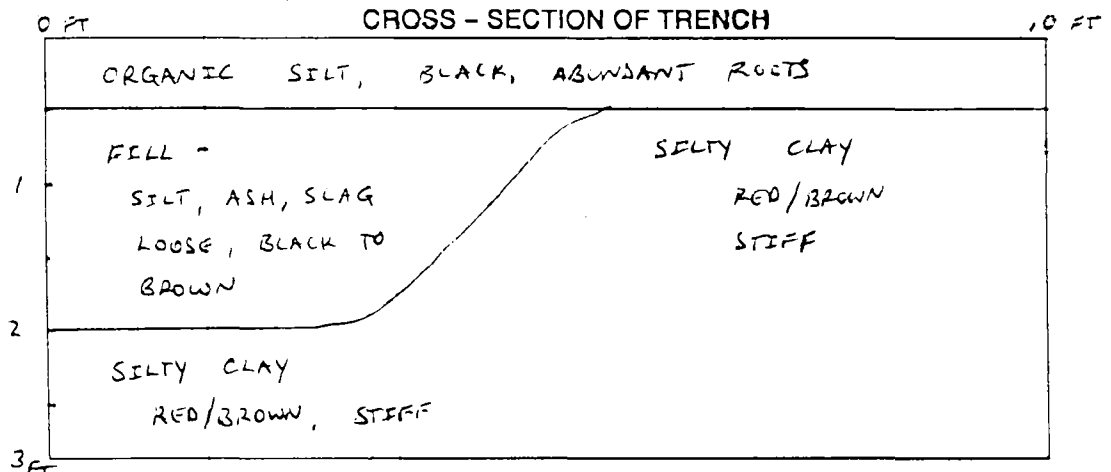
SECTION	DEPTH	DESCRIPTION
	-0-	ORGANIC SILT, BLACK, ABUNDANT ROOTS
	-0.3-	FILL -
	-1-	SILT, ASH, SLAG LOOSE, BLACK TO BROWN
	-2-	SILTY CLAY RED/BROWN, STIFF
	-3-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

URS CONSULTANTS, INC.

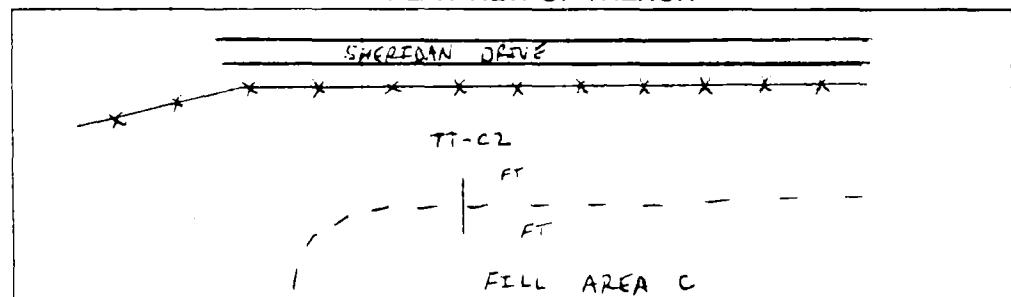
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C2	Trench Max. Depth: ~ 3 FT

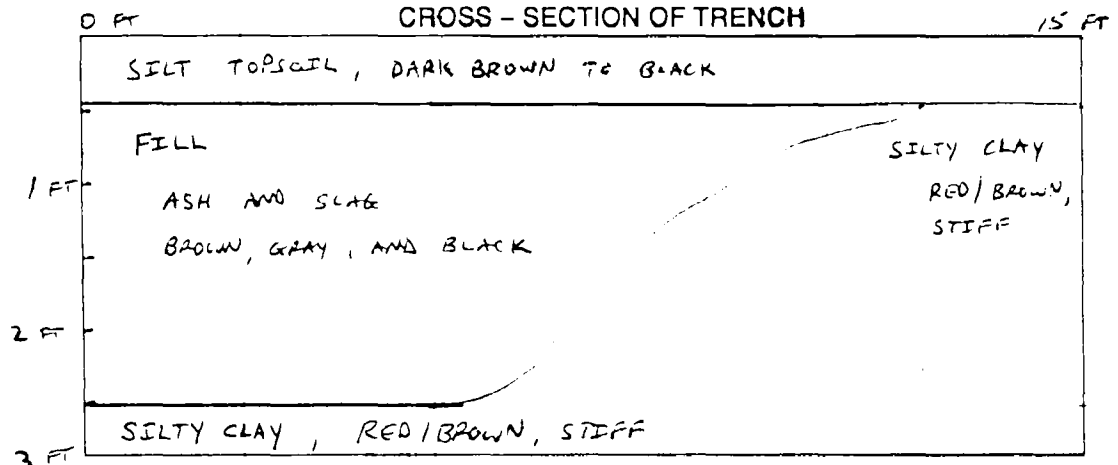
SECTION	DEPTH	DESCRIPTION
SS	-0-	SILT TOPSOIL, DARK BROWN TO BLACK
SS	-0.5-	
	-1-	FILL
	-1.5-	MIXTURE OF ASH, SILT, SLAG
	-2-	
	-2.5-	
SS	-3-	SILTY CLAY, RED/BROWN, STIFF

Comments: ABUNDANT WATER FLOWING INTO TRENCH ALONG FILL/CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH




Geologist: MICHAEL GUTMANN

Operator: WALTER GREENER

URS CONSULTANTS, INC.

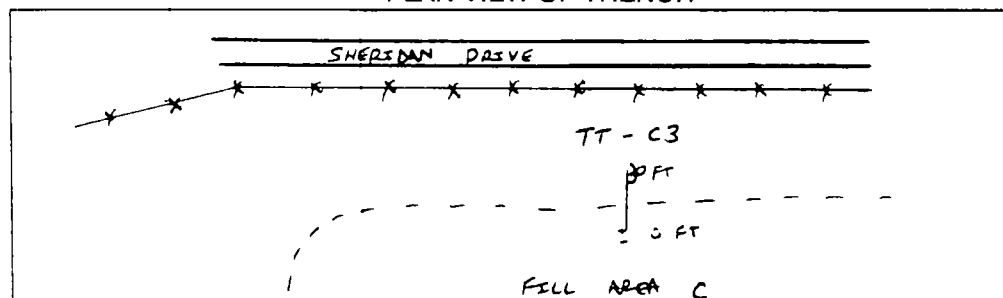
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT - C3	Trench Max. Depth: ~ 2 FT

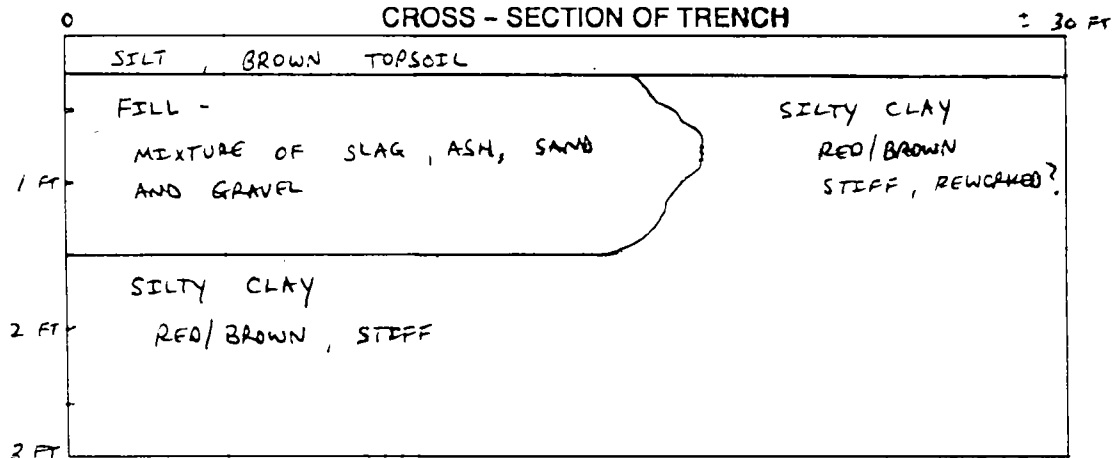
SECTION	DEPTH	DESCRIPTION
	-0- ~0.3 - -1- - ~1.5 -2- - - -3-	SILT, BROWN TOPSOIL FILL - MIXTURE OF SLAG, ASH, SAND AND GRAVEL SILTY CLAY RED/BROWN, STEFF

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GAFFNER

URS CONSULTANTS, INC.

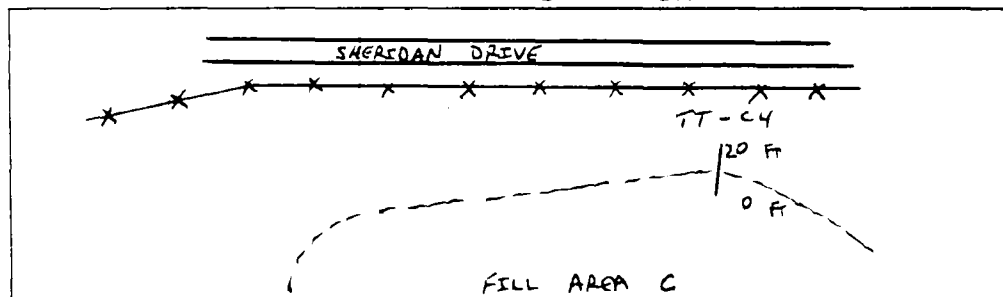
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DALLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT - C4	Trench Max. Depth: ~ 2 1/2 FEET

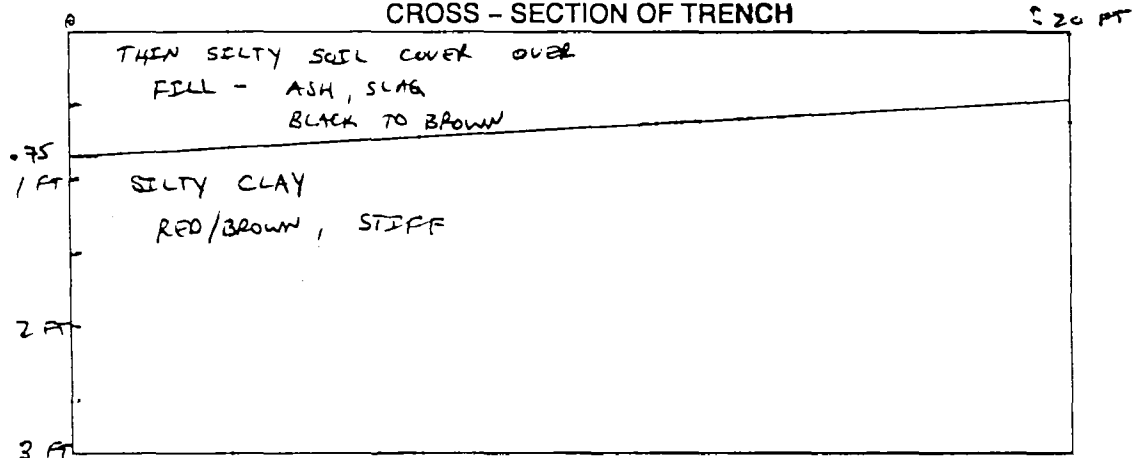
SECTION	DEPTH	DESCRIPTION
	-0-	THIN SILTY COVER (ROOTS) OVER
	-	FILL - SILT, ASH, SLAG
	-	LOOSE, BLACK TO BROWN
	-0.75-	
	-1-	SILTY CLAY
	-	RED/BROWN, STIFF
	-2-	
	-3-	

Comments: WATER ENTERING TRENCH AT FILL / SILTY CLAY INTERFACE ; OIL SHEEN ON SURFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN

Operator: WALTER GREIFNER

URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TENAWANDA, N.Y.

Client: DUNLOP TIRE CORP.

Project Number: 35246

Contractor: BUFFALO DRILLING CO.

Project: DUNLOP

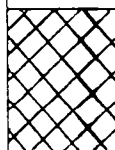
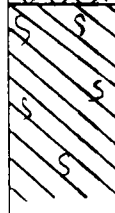
Date Started: 5/3/91

Sheet 1 of 1

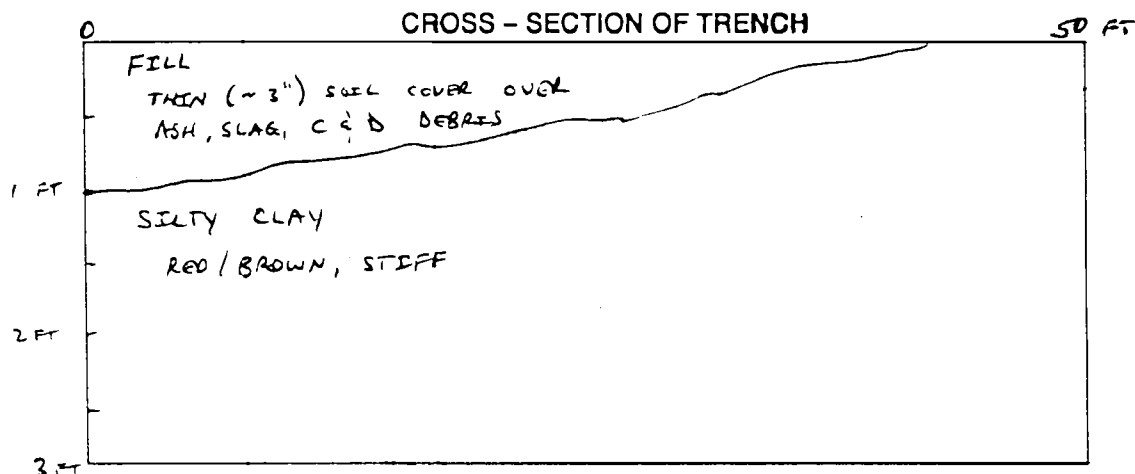
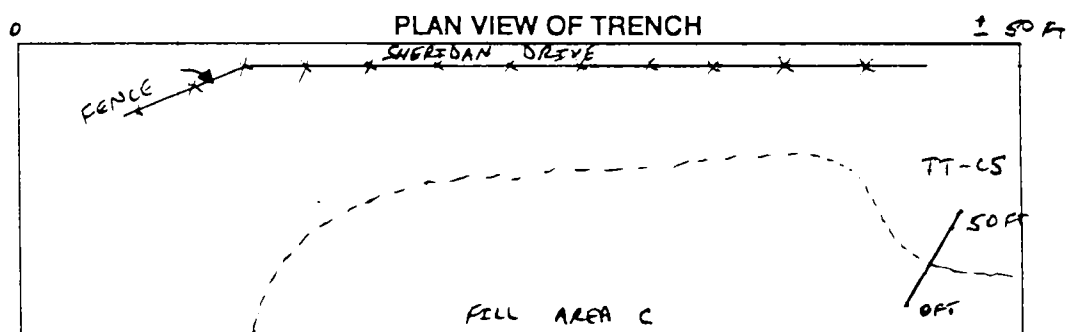
Date Completed: 5/3/91

Trench Number: TT-CS

Trench Max. Depth: ~ 2.5 FT

SECTION	DEPTH	DESCRIPTION
	-0-	FILL =
	-	THIN ~3" SILT SOFT COVER OVER
	-	ASH, SLAG, C AND D DEBRIS
	-1-	
	-	
	-1-	SILTY CLAY
	-	RED/BROWN, STIFF
	-2-	
	-	
	-3-	

Comments:




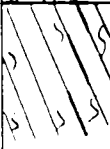
Geologist: MICHAEL GUTMANN

Operator: WALTER GREINER

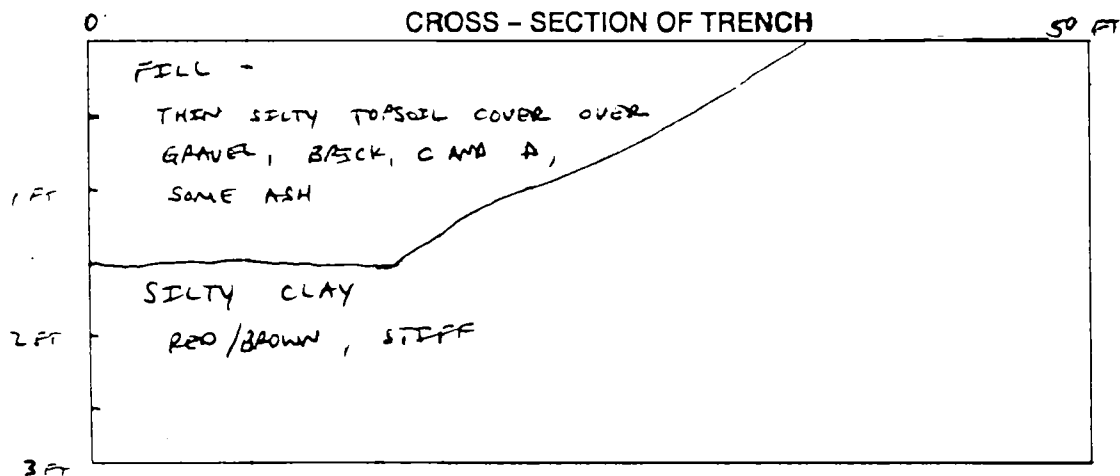
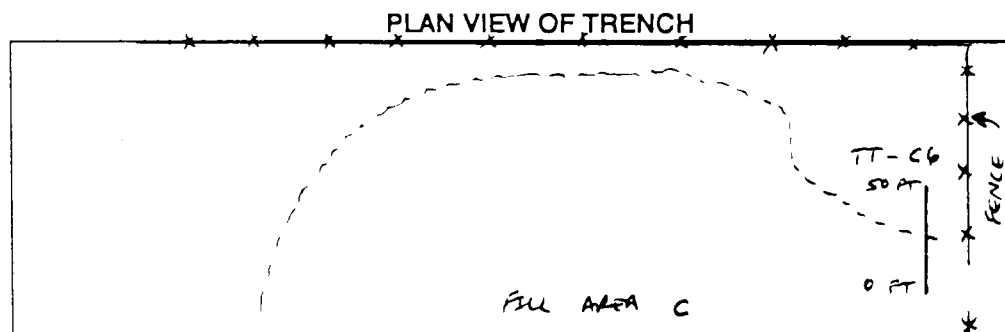
URS CONSULTANTS, INC.

TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C6	Trench Max. Depth: ~ 2.5 FT

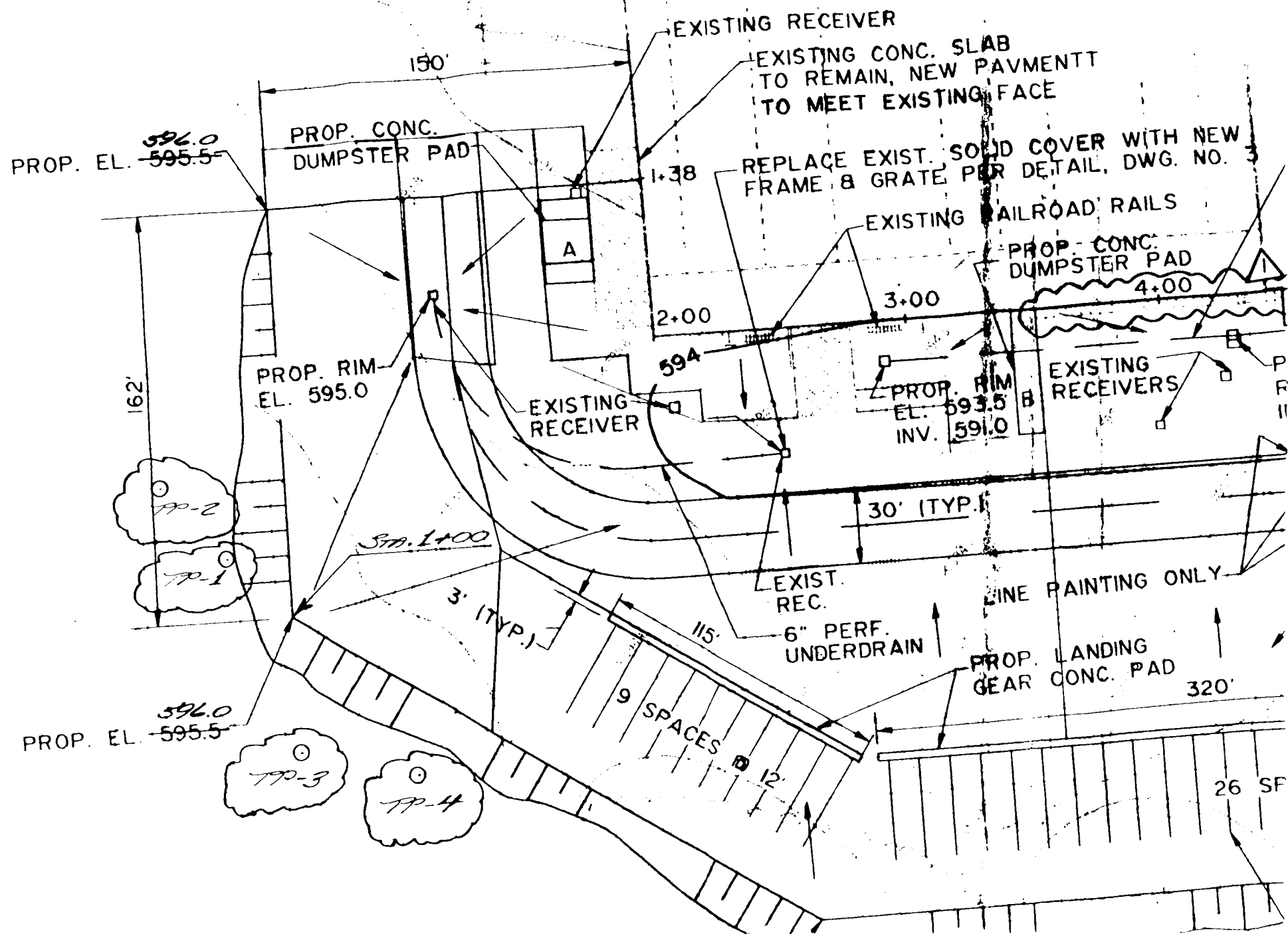
SECTION	DEPTH (FT)	DESCRIPTION
	0-	FILL - THIN SILTY TOPSOIL COVER OVER GRAVEL, BRICK, C AND D, SOME ASH
	-	
	-	
	-1-	
	1.3	SILTY CLAY RED / BROWN, STIFF
	-	
	-2-	
	-	
	-3-	

Comments:



Geologist: MICHAEL GUTMANN

Operator: WALTER GAENDER



PROJECT DUNLOP TIRE CORPJOB NO. 35246.02SUBJECT TEST PITS @ NW AREAMADE BY SCW DATE 12/2/92of PROJECT

CHKD. BY DATE

REF.
PAGETP-1 STA. 1+25, & 25' LT.

- 8" GRAY OVERBURDEN → CLAY + ASH
- 2' LT. BROWN CLAY CAP
- 3' BLACK TOPSOIL w/ ORGANIC MATERIAL
(CARBON BLACK + ASH)
- BROWN CLAY → ORIGINAL GROUND

TP-2 STA. 1+55, & 50' LT.

- 12" GRAY OVERBURDEN → CLAY + ASH
- 2' LT. BROWN CLAY CAP
- 2' BLACK TOPSOIL w/ ORGANIC MATERIAL
(CARBON BLACK + ASH)
- BROWN CLAY → ORIGINAL GROUND

TP-3 STA. 0+70, & 45' LT.

- 2' GRAY OVERBURDEN → CLAY + ASH
- 1' LT. BROWN CLAY CAP
- 18" BLACK TOPSOIL w/ ORGANIC MATERIAL
- BROWN CLAY → ORIGINAL GROUND

TP-4 STA. 0+25, & 30' LT.

- 8" GRAY OVERBURDEN → CLAY + ASH
- 2' LT. BROWN CLAY CAP
- 18" BLACK TOPSOIL w/ ORGANIC MATERIAL
- BROWN CLAY → ORIGINAL GROUND

NOTE: LOCATIONS
ARE APPROX

BLDG. CORN.
0+12 W

NEW WAREHOUSE

BLDG. CORN.
5+00N, 0+12W

TP-C3

SS-104
DS-4

1985 AES SU
1985 AES DIT
1981 ERIE COL
SAMPLE LOC.
1982 USGS/AE
BEDROCK MON
1982 AES SOIL

PROJECT

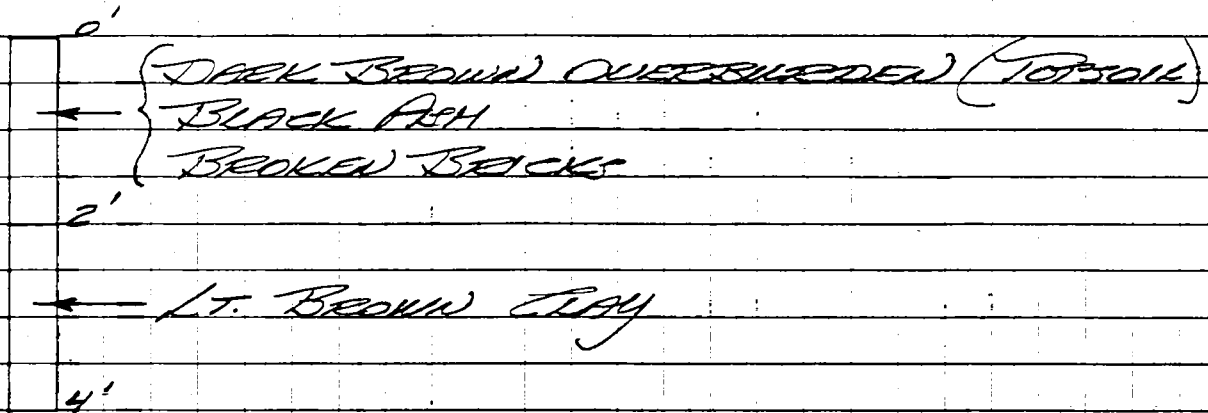
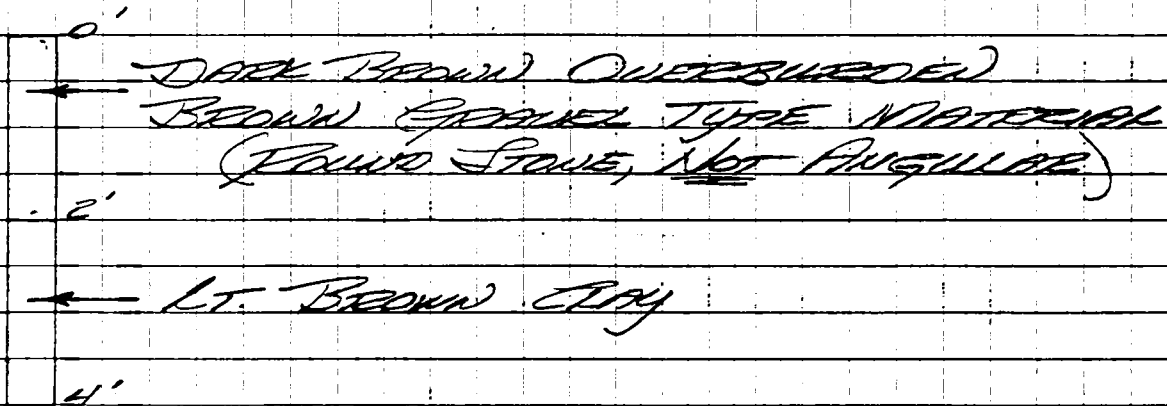
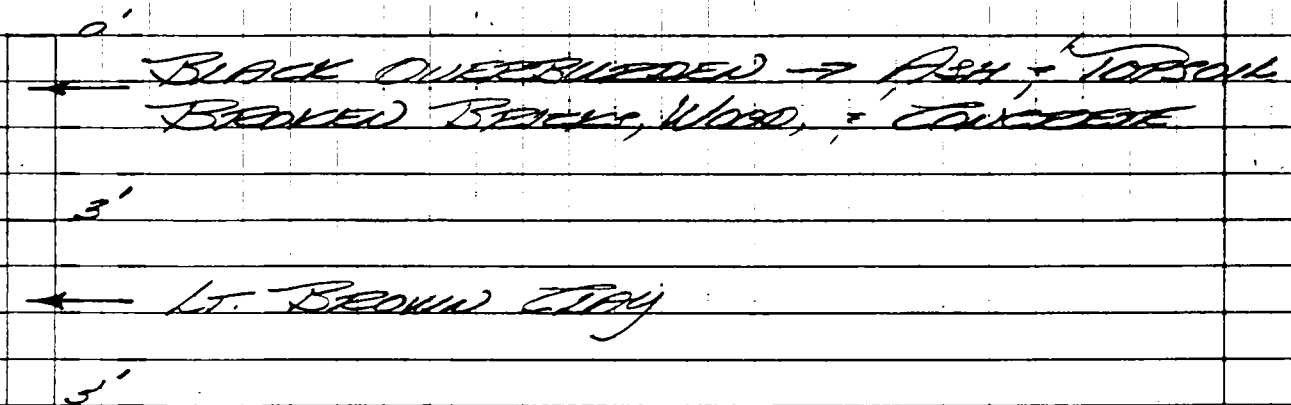
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DUNLOP LANDFILL CLOSURE
TEST PITS -> EAST of WAREHOUSE
12/14/92

JOB NO. 35246.02

MADE BY: KJL DATE 12/14/92

CHKD. BY DATE

REF.
PAGETP-1TP-2TP-3

PROJECT DUNNIP LANDFILL CLOSURE

JOB NO. 35244.02

SUBJECT TEST PITS - EPT of WAREHOUSE

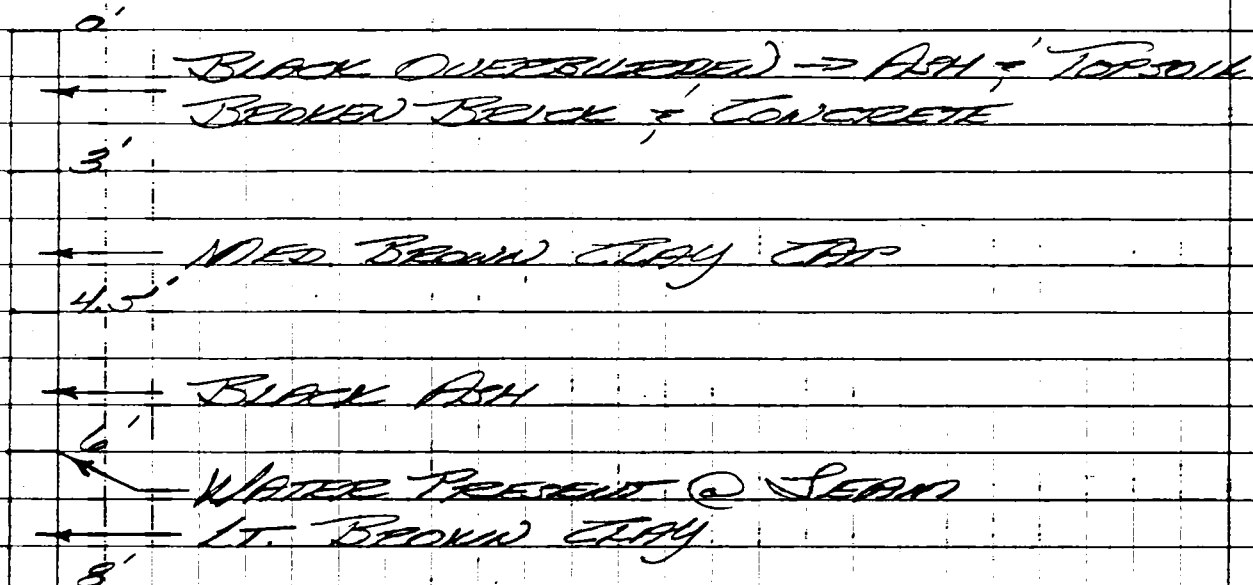
MADE BY JKD DATE 12/14/92

12/14/92

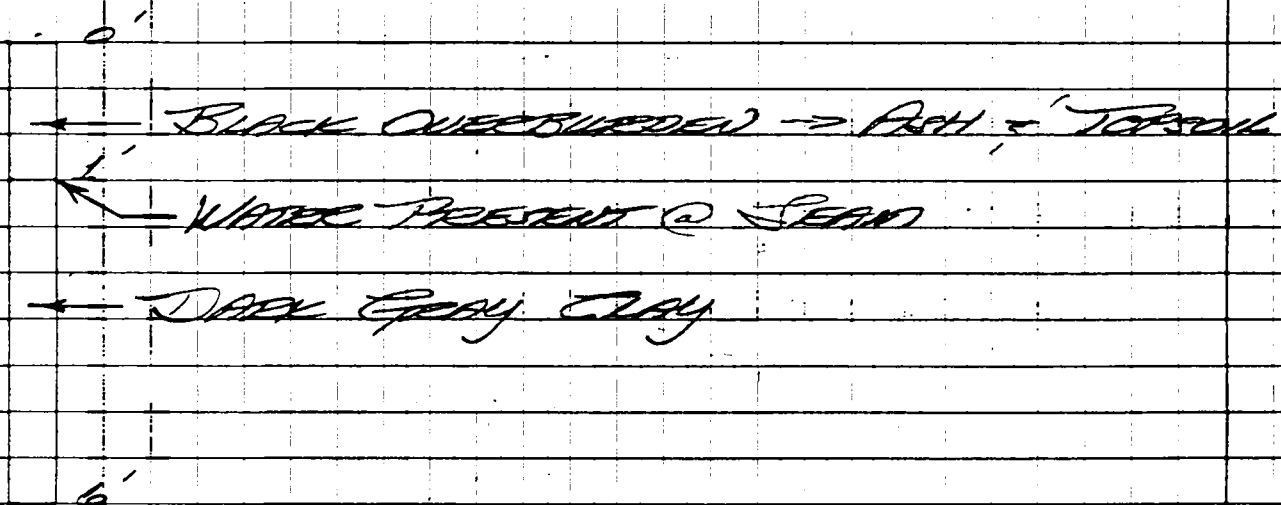
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TP-4



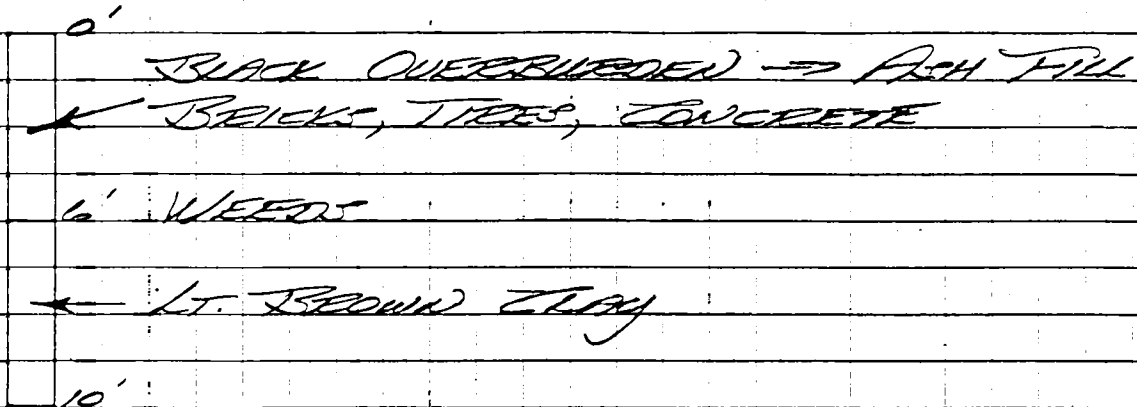
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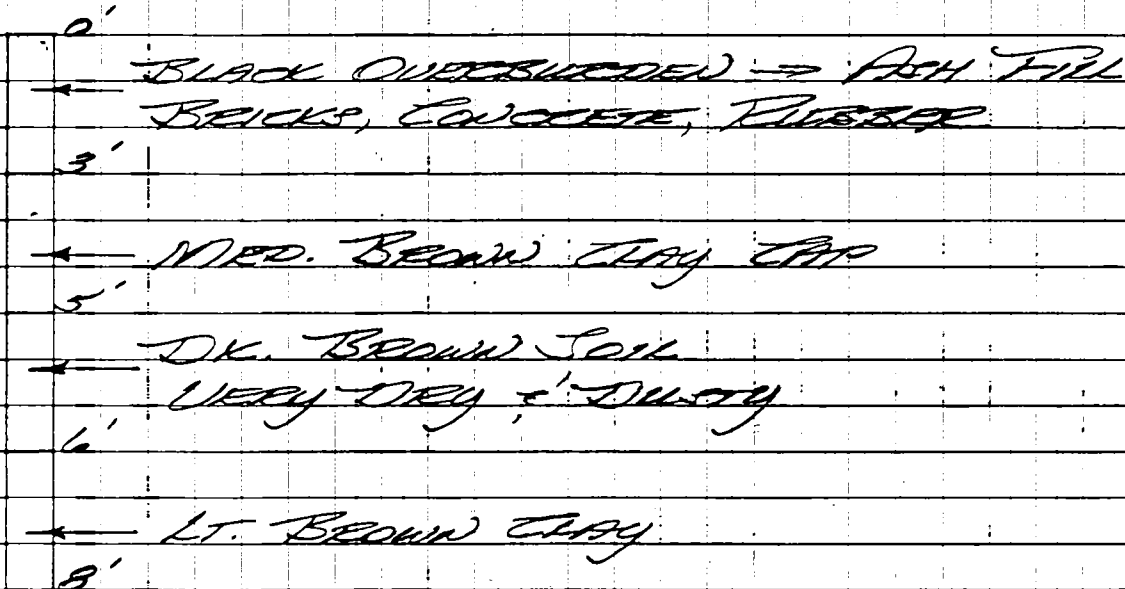
PROJECT DUNLOP LANDFILL CLOSURE
 SUBJECT TEST TPT-7 EAST of WAREHOUSE
 12/16/92

REF.
PAGE

TP-6



TP-7



PROJECT DUNLOP LANDFILL CLOSURE
 SUBJECT TEST TP-8 - EAST of WAREHOUSE
12/16/92

REF.
PAGE

TP-8

- 0'
← BLACK OVERBURDEN → ASH FILL
- 3' BRICKS, CONCRETE, TIRES
- ← MED. BROWN CLAY CAP
- 5'
- ← BLACK SOIL → ASH, BRICKS, GLASS, TIRES
- 8'
- ← LT. BROWN CLAY
- 10'

APPENDIX IV

CLAY BORROW COMPACTION

AND

TEST PAD DATA

DEMONSTRATION TEST PROGRAM SUMMARY

(A) Introduction

Demonstration tests of onsite clay soil were performed to assess construction methods and parameters for cover placement. Material used in the test program was obtained from the clay stockpile in Waste Area 'A'. Data characterizing the properties of the stockpile and borrow area soil are provided in Appendix A.2. The test program consisted of two related phases: (1) laboratory test on remolded samples, and (2) demonstration test on constructed test pads.

(B) Program Description

(1) Compaction and Remolded Permeability Testing:

- o Representative samples of the clay stockpile were tested for material properties and compaction response by Standard and Modified Proctor Compaction (ASTM D1557-91).
- o Permeability values were subsequently determined for each respective compaction point by maintaining corresponding unit weight in flexible wall perimeters (ASTM D5084-90).

(2) Demonstration Test Pads:

- o Three test pads were constructed consisting of: (1) three 6-inch lifts, (2) two 9-inch lifts, and (3) one 18-inch lift. Soil placed in the 6-inch and 9-inch lifts was compacted by 10 passes of a D-6 dozer, while the 18-inch lift was compacted by the dozer and the use of a 24,000 pound vibratory sheepfoot roller (4 to 6 passes).
- o Following compaction, the lift surface was proofrolled with a smooth-drum roller and moisture-density were measured at 2 locations using a

nuclear densimeter.

- o Prior to placement of the next lift, two undisturbed cores of the lift were obtained by pushing 3" diameter Shelby tubes to the depth of the lift. Samples were sealed and forwarded to GZA's laboratory for hydraulic conductivity determination (ASTM D5084-90).

(C) Analysis of Test Results

(1) Compaction and Remolded Permeability:

(i) Gradation - Compaction Results. Grain size analysis and Atterberg limits were determined on a composite sample (DUN SP#1) taken from the area A soil stockpile. Material parameters confirmed a high content of fines (85%) and clay (35%) with low plasticity properties (ML-CL) consistent with samples obtained from the proposed borrow area (Appendix A.2).

Maximum compacted densities of 125.4 pcf at 12.2% moisture, and 116.4 pcf at 15.4% moisture, were determined by Modified and Standard Proctor compaction procedures (Figure 4).

(ii) Remolded Permeability Results. Remolded permeability tests were performed for each of the five (5) Modified and Standard compaction points to define moisture-density/permeability relationships for the proposed onsite borrow soil. Hydraulic conductivity values ranging from 8.3×10^{-8} to 5.2×10^{-9} cm/s were recorded for 9 of the 10 compaction points. Samples were remolded between 5% drier than, to 3% wetter than, optimum moisture (Figure 4). One test, prepared on the dry side of optimum, produced a permeability greater than 1×10^{-7} cm/s.

These results demonstrate that low permeabilities can be achieved over a relatively wide range of moisture-density conditions.

(2) Demonstration Test Pads:

(i) Field Compaction Results. Measurements of moisture and density performed on the test lifts during construction are summarized in Table 1. In-place moisture content ranged from 11.2% to 14.9%. In-place densities obtained by dozer compaction ranged from 113.2 pcf to 117.6 pcf, equivalent to a modified maximum density of between 90.2% and 93.7%.

Compaction of the 18-inch lift using a medium weight sheepfoot roller with 6-inch feet produced a 3 to 4 percent increase in lift density over dozer compaction alone (Table 1). Densimeter readings recorded at 6- and 12-inch depths were equivalent using the sheepfoot roller suggesting good compaction at depth.

(ii) Permeability Test on Soil Core. Soil cores from the respective lifts were tested in the lab following extrusion from the Shelby tube and sample trimming. Measurement of test core dimensions following testing indicated that the prepared lab samples were 2% to 5% less dense than corresponding densimeter measurements taken in the field. This implies possible 'bulking' of the sample during test handling, or systematic error in field measurements. Hydraulic conductivity values for the 6-inch lifts, and upper 6 inches of the 9-inch and 18-inch lifts, ranged from 10^{-5} to 10^{-7} cm/s for dozer compaction. The core sample from the sheepfoot roller test produced a considerably lower permeability of 2×10^{-8} cm/s.

Following initial permeability testing, the density of the test specimens was increased to reflect corresponding field measurements of density, and the samples retested. All retested samples produced permeabilities in the 10^{-8} cm/s range representing a 2- to 3-order of magnitude reduction in permeability for an average 3 pcf increase in density.

Results of this testing confirm a significant increase in compaction and reduction of permeability using the sheepfoot roller. The compaction data further demonstrate effective compaction of the upper 6 inches using dozer compaction, and enhanced compaction of the 18-inch lift using the sheepfoot roller.

TABLE 1
FIELD COMPACTION TEST DATA SUMMARY

(1)

<u>6" Lift Test Pad</u>	In-place Density (pcf)	In-place Moisture (%)	% Compaction (Modified Proctor)
(A) Bottom Lift	113.2	13.0	90.2
	116.3	13.6	92.7
(B) Middle Lift	115.8	13.9	92.3
	117.6	13.1	93.7
(C) Top Lift	115.9	13.2	92.4
	116.7	14.1	93.1

(2)

<u>9" Lift Test Pad</u>	In-place Density (pcf)	In-place Moisture (%)	% Compaction (Modified Proctor)
(A) Bottom Lift	114.3	14.6	91.1
	115.0	14.6	91.7
(B) Top Lift	114.1	14.0	91.0
	116.4	13.2	92.8

(3)

<u>18" Lift Test Pad</u>	In-place Density (pcf)	In-place Moisture (%)	% Compaction (Modified Proctor)
(A) Dozer Compaction	115.4 117.3	14.9 12.9	92.0 93.5
(B) Sheepfoot Compaction			
- 6" Depth Reading	120.5 121.4	12.0 12.9	96.1 96.7
- 12" Depth Reading	121.2 117.3	11.2 12.2	96.6 93.5

GZA
GeoEnvironmental
of New York

Engineers and
Scientists

June 30, 1992
File: R6007

JUL 1 1992
35246
(1000)



URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202-1805

Attention: Mr. Duane Lenhardt

Re: Geotechnical Sample Analysis, Dunlop Site

Dear Mr. Lenhardt:

GZA GeoEnvironmental of New York (GZA) in accordance with our proposal dated June 22, 1992 has laboratory tested one bulk sample designated as DUN SP#1 and delivered to GZA's Buffalo office by URS Consultants, Inc. (URS).

Bulk sample no. DUN SP#1 was tested for as received moisture content, liquid and plastic limits, grain size analysis, moisture-density relationship, and permeability following ASTM procedures. Enclosed are a copy of a geotechnical laboratory testing data summary sheet, associated data plots and test procedures.

After you have reviewed these data, please do not hesitate to contact the undersigned if you have any questions or require any additional information. GZA appreciates the opportunity to work with you on this project and we look forward to a continued association.

Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK

Robert A. Redenbach

Robert A. Redenbach
Senior Engineering Technician

Donald R. McMahon

Donald R. McMahon, P.E.
Associate Principal

RAR

Enclosures

~~CONFIDENTIAL~~

Distribution	
FILE	

GEOTECHNICAL LABORATORY TEST PROCEDURES

GEOTECHNICAL SAMPLE ANALYSIS

DUNLOP SITE

TONAWANDA, N.Y.

File No. R6007.00

1. The following tests were performed with the noted ASTM test designation:

TEST

ASTM DESIGNATION

Moisture Content	D 2216-90
Liquid and Plastic Limits	D 4318-84 (method A)
Grain Size Analysis	D 422-63 (see Item 2)
Moisture Density Relationships	D 1557-91
Permeability Test	D 5084-90 (see Item 3)

2. Test Procedures for Combined Sieve and Hydrometer Analysis

When both sieve and hydrometer analyses are required a combined mechanical analysis is performed. This procedure is, in part, similar to ASTM's D 2217-66 (wet preparation of soil sample for grain-size analysis and determination of soil constants-B).

A representative portion of the minus No. 4 material was mixed with water so as to form a thin homogeneous slurry. The fines suspended in this slurry were then decanted over a No. 200 sieve into an empty hydrometer jar, and the mixing-decanting process repeated until most of the fines had been removed. Coarser fractions remaining after the decantation were then oven dried and sieved through a nest of sieves (Nos. 10, 20, 40, 60, 100, and 200). Any material passing the No. 200 sieve was added to the hydrometer jar containing the finer fraction.

Hydrometer analysis of these fines was performed in the conventional manner.

3. Test Procedures for Permeability Test

Permeability tests were performed on samples reconstituted to specified densities approximately equivalent to the dry density of the five points obtained from the modified Proctor test (ASTM D 1557-91 Method A) at the corresponding water content.

Reconstituted test specimens were prepared in a manner similar to that described in "Special Procedures for Testing of Soil and Rock for Engineering Purposes" STP 479, ASTM 5th Edition, pages 101-103. The specimens were reconstituted in 2.8-inch diameter by 2.5-inch long sample formers. A specific amount of soil at the appropriate water content was weighed in five equal portions. Each portion was tamped by means of a mechanical tamping foot to a specified height in the mold. After five layers were compacted the samples were weighed, dimensioned, and their

GEOTECHNICAL LABORATORY TEST PROCEDURES - FILE NO. R6907.00

unit weight verified. After verification of the unit weight, the test samples were placed on a previously de-aired, modified triaxial cell base and porous stone. A membrane was added and the samples sealed top and bottom by 'O' rings.

The samples were back pressured under a small effective stress to create complete saturation of the samples. The chamber pressure was then increased such that the desired effective stress was obtained to prevent volume change of the samples. This effective stress was allowed to act for about 24 hours.

After the saturation phase, the response of the soil samples were checked by increasing the cell pressure and monitoring the pore pressure. Where required, additional back pressure was applied so as to achieve a pore pressure response equal to or greater than 95 percent. When the desired saturation was achieved, the samples were attached to the permeability apparatus and tested in accordance with ASTM procedure D 5084-90, "Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter". During the test, measurements of flow vs. time were recorded with the permeability value reported being the average of several consistent values obtained during the test.

LEGEND FOR GEOTECHNICAL
LABORATORY DATA SUMMARY SHEET

WATER CONTENT (ASTM D 2216)

% = WATER CONTENT IN PERCENT

ATTERBERG LIMITS (ASTM D 4318)

LL % = LIQUID LIMIT IN PERCENT

PL % = PLASTIC LIMIT IN PERCENT

PI = PLASTICITY INDEX

GRAIN SIZE ANALYSIS (ASTM D 422)

SIEVE -200 % = PERCENT FINES, MATERIAL FINER THAN NO. 200 SIEVE
(0.074 MM)

HYD. -2 μ % = PERCENT FINER THAN 2 MICRONS

MOISTURE-DENSITY RELATIONSHIP (Modified) (ASTM D 1557)

MAX. DRY DENSITY pcf = MAXIMUM DRY DENSITY IN POUNDS PER CUBIC FOOT

OPT. WATER CONTENT % = OPTIMUM WATER CONTENT IN PERCENT

PERMEABILITY TEST (ASTM D 5084)

PERMEABILITY cm/sec. = PERMEABILITY MEASURED IN CENTIMETERS PER SECOND

TYPE OF TEST K_r = RECONSTITUTED (REMOLDED) SAMPLE
 K = UNDISTURBED SAMPLE

$\bar{\sigma}_c$ psf = EFFECTIVE CONFINING PRESSURE DURING PERMEABILITY TEST IN POUNDS PER SQUARE FOOT

DRY UNIT WT. pcf = DRY DENSITY OF TEST SAMPLE IN POUNDS PER CUBIC FOOT

WATER CONTENT % = WATER CONTENT OF TEST SAMPLE IN PERCENT

GZA GeoEnvironmental of New York
Engineers and Scientists

GEOTECHNICAL LABORATORY TESTING DATA SUMMARY

PROJECT NAME: GEOTECHNICAL SAMPLE ANALYSIS, DUNLOP SITE

PROJECT NO. R6007.00

PROJECT ENGINEER: D.R. LENHARDT

MATERIAL SOURCE: DUNLOP SITE, TONAWANDA, N.Y.

DATE ASSIGNED: 6/23/92

WORK ORDER NO. 1639

[illegible]

U.S. STANDARD SIEVE SIZE



WORK ORDER
NO. 1838
DATE 8/26/82
FILE R8007.00

GZA-GEOENVIRONMENTAL OF NEW YORK

364 Nagel Drive
Buffalo, New York 14225
(716) 685-2300

FACSIMILE COVER SHEET

To: STEVE MOELLER

From: ROBERT REDENBACH

Date: 8/12/92

Time:

File No.: R6007.00

Fax Number:
(716) 856-2545GZA's Fax No.:
(716) 685-3629

Number of Pages Including Cover Sheet:

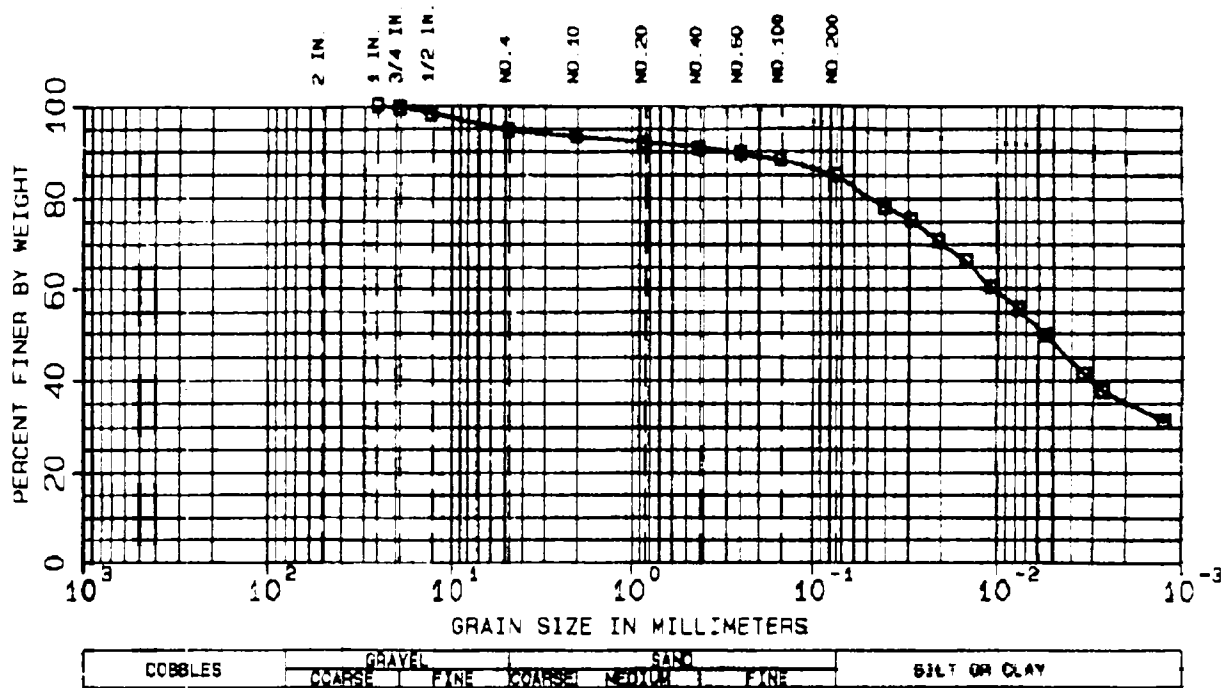
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Regarding: LABORATORY TEST DATA FOR SAMPLE DUN SP#1
STANDARD PROCTOR & PERMEABILITY DATA.

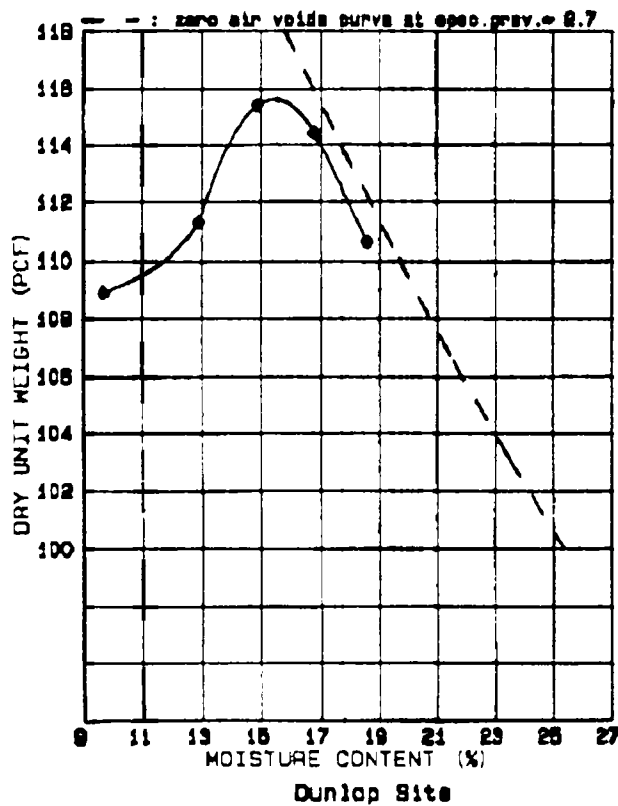
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GRAIN SIZE DISTRIBUTION

U.S. STANDARD SIEVE SIZE



COMPACTION



SOIL PROPERTIES

SOIL DESCRIPTION: Brown Lean Clay with Sand (CL)

OPT. WATER CONTENT 18.4 % MAX. DRY UNIT WT. 115.6 pcf
 LIQUID LIMIT 34 % PLASTIC LIMIT 18 % SPECIFIC GRAVITY

COMPACTION PROCEDURE

ASTM TEST D698-81 PROCEDURE A
 AASHTO TEST PROCEDURE
 MOLD HEIGHT 4.00 in. MOLD DIA. 4 in.
 NO. LAYERS 3 BLOWS/LAYER 25
 HAMMER WT. 5.5 lbs. DROP HEIGHT 18 in.

GEOTECHNICAL SAMPLE ANALYSIS
DUNLOP SITECOMPACTION-GRADATION
TESTS

EXPLOR. NO. Bulk Sample
 SAMPLE NO. DUN SP-1
 TECH. REVIEWER RAR RAR

WORK ORDER NO. 1830
 DATE 7/18/92
 FILE R8007.00

BIOTECHNICAL LABORATORY TESTING DATA SUMMARY

PROJECT NAME: GEOTECHNICAL SAMPLE ANALYSIS, DUNLOP SITE
PROJECT NO. R6007.00 PROJECT ENGINEER: D.R. LENHARDT

MATERIAL SOURCE: DUNLOP SITE, TONAWANDA, N.Y.
DATE ASSIGNED: 7/13/92

WORK ORDER NO. 1639

[illegible]

**C2A GeoEnvironmental of New York
Engineers and Scientists**

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GZA-GEOENVIRONMENTAL OF NEW YORK
364 Nagel Drive
Buffalo, New York 14225
(716) 685-2300

FACSIMILE COVER SHEET

To: *CHUCK HURLEY*

From: *ROB REDENBACH*

Date: *8/12/92*

Time: *15:03*

File No.: *R6007.00*

Fax Number:
(716) 856-2545

GZA's Fax No.:
(716) 685-3629

Number of Pages Including Cover Sheet:

5

Regarding: *LABORATORY TEST DATA FOR SHELBY TUBE SAMPLES*
FROM TEST PADS

Comments: *HARD COPY TO FOLLOW*

GZA
GeoEnvironmental
of New York

Engineers and
Scientists

July 22, 1992
File: R6007



URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202-1805

Attention: Mr. Duane Lenhardt

Re: Geotechnical Sample Analysis, Dunlop Site

Dear Mr. Lenhardt:

364 Noyes Drive
Buffalo, New York
14224
716-685-2300
FAX 716-685-3629

GZA GeoEnvironmental of New York (GZA) is in receipt of 14 Shelby tube samples collected from the Dunlop Site project and delivered to our Buffalo office by URS Consultants, Inc. (URS). Below is a list of information pertaining to the Shelby tubes that you requested.

<u>TEST PAD NO.</u>	<u>SAMPLE NO.</u>	<u>LIFT NO.</u>	<u>RECOVERY</u>
1	ST#1	1	5"
1	ST#2	1	5"
1	ST#1	2	7"
1	ST#2	2	8"
1	ST#1	3	7"
1	ST#2	3	7"
2	ST#1	-	17"
2	ST#2	-	13"
2	ST#3	1	18"
2	ST#4	1	17"
3	ST#1	1	9.5"
3	ST#2	1	9"
3	ST#1	2	9"
3	ST#2	2	8"

GZA will store the Shelby tube samples until a testing program is defined by URS.

Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK

Robert A. Redenhach

Robert A. Redenhach
Senior Engineering Technician

GEOTECHNICAL LABORATORY TESTING DATA SUMMARY

PROJECT NAME: GEOTECHNICAL SAMPLE ANALYSIS, DUNLOP SITE
PROJECT NO. R6007.00

PROJECT ENGINEER: D.R. LENHARDT

MATERIAL SOURCE: DUNLOP SITE, TONAWANDA, N.Y.
DATE ASSIGNED: 7/23/92

WORK ORDER NO. 1661

IDENTIFICATION			WATER CONTENT	ATTERBERG LIMITS			GRAIN SIZE ANALYSIS		MOISTURE-DENSITY RELATIONSHIP (Modified)		PERMEABILITY TEST					LABORATORY LOG AND SOIL DESCRIPTION
TEST PAD AND LIFT NO.	SAMPLE NUMBER	DEPTH ft.	%	LL %	PL %	PI	SIEVE -200 %	HYD. -2 _a %	MAX. DRY DENSITY pcf	OPT. WATER CONTENT %	PERME- ABILITY cm/sec.	TYPE OF TEST	$\frac{c}{\sigma'_c}$ pcf	DRY UNIT WT pcf	WATER CONTENT %	
TP#1 LIFT#1	ST#1	0.0- 0.46							Average Total Unit Weight (0.0 - 0.46') = 116.5 PCF (1)							Reddish Brown Lean Clay with Sand (CL)
	ST#1	0.2- 0.4									1.7xEE-05	K	432	109.4	16.0	
	ST#1	0.2- 0.4									1.6xEE-08	K	3312	114.9	17.9	
TP#1 LIFT#2	ST#2	0.0- 0.61														Reddish Brown Lean Clay with Sand (CL) gradient equal to 29 gradient equal to 15
	ST#2	0.0- 0.1	16.1													
	ST#2	0.2- 0.4									2.6xEE-05	K	432	111.8	15.6	
	ST#2	0.2- 0.4									1.1xEE-07	K	1872	113.1	17.6	
	ST#2	0.2- 0.4									9.9xEE-08	K	1872	113.1	17.6	
	ST#2	0.5- 0.6	15.7													
TP#1 LIFT#3	ST#1	0.0- 0.54														Reddish Brown Lean Clay with Sand (CL)
	ST#1	0.05- 0.15	15.5													
	ST#1	0.15- 0.35									7.9xEE-08	K	576	111.7	16.3	
	ST#1	0.35- 0.45	16.2													
																(1) = total unit weight includes max that penetrated into the top and bottom of the sample.

GEOTECHNICAL LABORATORY TESTING DATA SUMMARY

PROJECT NAME: GEOTECHNICAL SAMPLE ANALYSIS, DUNLOP SITE
PROJECT NO. R6007.00 PROJECT ENGINEER: D.R. LENHARDT

MATERIAL SOURCE: DUNLOP SITE, TONAWANDA, N.Y.
DATE ASSIGNED: 7/23/92

WORK ORDER NO. 1661

IDENTIFICATION			WATER CONTENT	ATTERBERG LIMITS			GRAIN SIZE ANALYSIS		MOISTURE-DENSITY RELATIONSHIP (Modified)		PERMEABILITY TEST					LABORATORY LOG AND SOIL DESCRIPTION
TEST PAD AND LIFT NO.	SAMPLE NUMBER	DEPTH ft.	%	LL %	PL %	PI	SIEVE -200 %	HYD. -2 μ %	MAX. DRY DENSITY pcf	OPT. WATER CONTENT %	PERME-ABILITY cm/sec.	TYPE OF TEST	$\bar{\sigma}_c$ psf	DRY UNIT WT pcf	WATER CONTENT %	
TP#2	ST#1	0.0-0.43	Average Total Unit Weight (0.0 - 0.43') = 123.1 PCF													Reddish Brown Lean Clay (CL) gradient equal to 28 gradient equal to 15 * = water content of trimmings from portion tested for permeability
	ST#1	0.0-0.1	15.1													
	ST#1	0.2-0.4									1.3xEE-07	K	576	109.5	17.6	
	ST#1	0.2-0.4									1.1xEE-07	K	576	109.5	17.6	
	ST#1		*15.7													
TP#2 LIFT#1	ST#3	0.0-0.5	Average Total Unit Weight (0.0 - 0.5') = 130.9 PCF													Reddish Brown Lean Clay (CL) * = water content of trimmings from portion tested for permeability
	ST#3	0.0-0.1	15.2													
	ST#3	0.2-0.4									2.1xEE-08	K	432	114.9	16.3	
	ST#3		*16.4													
TP#2 LIFT#1	ST#3	0.5-1.0	Average Total Unit Weight (0.5 - 1.0') = 123.4 PCF													Reddish Brown Lean Clay (CL)
	ST#3	0.55-0.65	16.5													
	ST#3	0.75-0.92									7.1xEE-05	K	288	108.2	17.0	
	ST#3	0.75-0.92									4.1xEE-08	K	2736	110.7	18.5	
	ST#3	0.92-1.0	17.1													

GEOTECHNICAL LABORATORY TESTING DATA SUMMARY

PROJECT NAME: GEOTECHNICAL SAMPLE ANALYSIS, DUNLOP SITE

PROJECT NO. R6007.00

PROJECT ENGINEER: D.R. LEMNARDT

MATERIAL SOURCE: DUNLOP SITE, TONAWANDA, N.Y.

DATE ASSIGNED: 7/23/92

WORK ORDER NO. 1661

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URS

CONSULTANTS

MAKING TECHNOLOGY WORK

DAILY CONSTRUCTION REPORT

DATE JULY 21, 1992

DAY

S M T W T F S
X

PROJECT DUNLOP REMEDIAL DESIGN
JOB NO. 35246.02
CLIENT DUNLOP TIRE
CONTRACTOR NORTHEAST PAVING
PROJECT MANAGER CHARLES W. HURLEY

WEATHER

Brine Sun	X	Clear	Overcast	Rain	Snow
Temp	32-50	50-70	70-80	80-90	90-100
Wind	Still	Light	High	Report No	
Humidity	Dry	Moist	Humid		1

TEMP.

WIND

HUMIDITY

AVERAGE FIELD FORCE

3

Name of Contractor	Non-manual	Manual	Remarks
NORTHEAST PAVING		1 SUPERINTENDANT 2 OPERATIONS	

VISITORS

Time	Representing	Representing	Remarks
8AM	CHARLES HURLEY	URS CONSULTANTS	SITE VISIT
9:20AM	DUANE LENHART	EMPIRE SOILS	SOIL TECHNICIAN
1:00PM	JEFF BLOCK		
	GLENN MAY	NYSDOC	SITE VISIT
	KE SCIASCIA	NYSDOC	SITE VISIT

EQUIPMENT AT THE SITE

1 TEN WHEELED OIL TRUCK, 1 CAT 950B FRONT END LOADER, CAT DGC DOZER, CAT CP563 SHEEPFOOT ROLLER W/ 6" TOES AND A CASE 602B SMOOTH ROLLER

CONSTRUCTION ACTIVITIES

I ARRIVED ON-SITE AT 8:00AM AND THE CONTRACTOR WAS ALREADY ON-SITE AND HAD ALREADY MOBILIZED THE ABOVE LISTED EQUIPMENT.

BY 8:30AM THE CONTRACTOR STARTED TO PREPARE THE SUBGRADE FOR TEST PADS #1 & 2 BY GRUBBING AND LEVELING THE AREA SHOWN ON FIGURE 1 WITH THE DGC DOZER.

AT 8:45AM I INSPECTED THE STOCKPILE OF CAPPING MATERIAL. THE MATERIAL IS REDDISH BROWN CLAY WITH SOME SILT AND SOME STONES LESS THAN 2 INCHES IN DIAMETER.

BY 9:00AM THE CONTRACTOR STARTED TO COMPACT SUBGRADE WITH CAT CP563 SHEEPFOOT.

AT 9:20AM EMPIRE SOILS ARRIVED ON-SITE AND BY 9:45AM STARTED TO TAKE IN-PLACE DENSITY (1PO3) TESTS ON THE SUBGRADE AFTER A TOTAL OF FOUR (4) OVERLAPPING PASSES WITH THE SHEEPFOOT.

PAGE 1 OF 2 PAGES

BY THOMAS A OSTRANDER TITLE ENGINEER

DAILY CONSTRUCTION REPORT

(Continuation Sheet)

PROJECT Dunlop Remedial Design REPORT NO. 1
JOB NO. 35246.02 DATE JULY 21, 1992

CONSTRUCTION ACTIVITIES (Continued)

AFTER 2 IPD'S IT WAS FOUND THAT THE COMPACTION WAS TOO LOW AND THE MOISTURE CONTENT WAS HIGH. THEREFORE, URS INSTRUCTED THE CONTRACTOR TO TAKE SIX (6) MORE ADDITIONAL PASSES WITH THE SHARPFOOT. REFER TO THE EMPIRE SOILS IPD TEST REPORT FOR RESULTS OF ALL IPD TEST PERFORMED TODAY. (TABLE 1)

AT THIS TIME, I WOULD LIKE TO NOTE THAT THE SUBGRADE IS A MIXTURE OF WASTE MATERIAL (BRICKS, MISCELLANEOUS DEBRIS, ASH) AND AMBIENT SOILS.

BY 10:15AM THE CONTRACTOR WAS FINISHED WITH COMPACTING THE SUBGRADE (NOW A TOTAL OF 10 PASSES WITH THE ROLLER) WHEN FEASIBLE, WE TOOK 2 IPD TEST OF THE SUBGRADE. BOTH TESTS THE % COMPACTION WAS ~90%. DUANE LEHMANN STATED THAT THOSE RESULTS WERE GOOD ENOUGH AND HE TOLD THE CONTRACTOR TO PROCEED WITH PLACING LIFT NO. 1 FOR TEST PAD NO. 1 (A SIX (6) INCH LIFT)

AT 10:45AM THE CONTRACTOR WAS FINISH PLACING LIFT NO. 1 FOR TEST PAD NO. 1, AND PROCEEDED TO COMPACT THIS 6 INCH LIFT BY TRACKING WITH THE DG ROLLER (6 PASSES)

AT 11:20AM DUANE LEHMANN MADE THE CALL TO HAVE THE CONTRACTOR TO MOBILIZE A SMOOTH DRUM ROLLER TO COMPACT THE TOP 2 TO 3 INCH OF THE LIFT WHICH THE ROLLER WAS JUST SCANNIFYING, NOT COMPACTING. THE CONTRACTOR AGREED AND SAID IT WOULD TAKE APPROXIMATELY 1.5 HRS TO GET A ROLLER. THEREFORE, AT 11:30AM THE CONTRACTOR STARTED TO PLACE TEST PAD NO. 2 18 INCH SINGLE LIFT.

BY 12:30PM THE CONTRACTOR WAS FINISH PLACING THE TEST PAD AND THEN PROCEEDED TO BREAK FOR LUNCH.

SHEET 2 OF 6

BY THOMAS A OSTRANDER TITLE ENGINEER

DAILY CONSTRUCTION REPORT

(Continuation Sheet)

PROJECT DUNLOP REMEDIATION DESIGN REPORT NO. 1
JOB NO. 3524602 DATE JULY 21, 1992

CONSTRUCTION ACTIVITIES (Continued)

BY 1:15 PM, THE CONTRACTOR STARTED COMPACTING TEST PAD NO. 2 18 INCH LIFT BY TRACKING WITH THE OZEN (6 PASSES)

AT 1:30 PM THE SMOOTH ROLLER ARRIVED ON SITE AND THE CONTRACTOR USED THIS ROLLER TO MAKE 2 PASSES ON EACH OF THE TEST PADS TO FINISH COMPACTING THEM.

WHEN IT WAS FEASIBLE, I INSTRUCTED EMPIRE TO TEST BOTH TEST PADS WITH 2 IPOs EACH. ALL FOUR (4) IPOs PASSED AND WE PUSH A SET OF 2 SHELBY TUBES PER TEST PAD (ONE SHELBY TUBE TO BE TESTED AND THE SECOND TO BE A BACKUP).

AT 2:05 PM THE CONTRACTOR PROCEEDED TO PLACE AND COMPACT THE SECOND GINCH ON TEST PAD NO. 1 AND BY 2:45 PM I INSTRUCTED EMPIRE TO TAKE 2 IPO TEST ON THIS LIFT NO. 2. ONE OF THE TWO TESTS FAILED COMPACTED, THEREFORE I INSTRUCTED THE CONTRACTOR TO TAKE TWO (2) MORE ADDITIONAL PASSES WITH THE SMOOTH ROLLER.

WHEN FEASIBLE, WE RETESTED TEST PAD NO. 1 LIFT NO. 2; THIS TIME BOTH TESTS PASSED. SO WE PROCEEDED TO PUSH SHELBY TUBES.

FOLLOW THAT AT 3:00 PM THE CONTRACTOR STARTED TO PLACE AND COMPACT LIFT NO. 3 (THE FINAL GINCH LIFT) ON TEST PAD NO. 1.

BY 3:45 PM I HAD EMPIRE TAKE 2 IPO TESTS ON THIS LIFT; BOTH OF WHICH PASSED. NEXT WE PUSHED THE FINAL SHELBY TUBES FOR THIS TEST PAD NO. 1.

SHEET 3 OF 6

BY THOMAS A OSTRANDER TITLE ENGINEER

DAILY CONSTRUCTION REPORT

(Continuation Sheet)

PROJECT ONLUP REMEDIAL DESIGN

REPORT NO. 1

JOB NO. 35246.02

DATE JULY 21, 1992

CONSTRUCTION ACTIVITIES (Continued)

PEN DUANE LEHNHARDT REQUEST, THE CONTRACTOR PROCEEDED TO RECOMPACT TEST PAD NO 2 WITH 4 PASSES WITH THE SHEEPFOOT AND 2 MORE PASSES OF THE SMOOTH ROLLER TO SEE WHAT EFFECT IT WOULD HAVE ON THE TEST PAD (AT 4:00 PM).

BY 4:20 PM EMPIRE WAS ABLE TO TAKE A TOTAL OF FOUR (4) IPO TEST AT TWO (2) LOCATION, TWO (2) OF THE TEST WERE TAKEN AT 6 INCH IN DEPTH AND THE OTHER 2 WERE AT THE FULL DEPTH POSSIBLE WITH THE TROILER. ALL TESTS PASSED. THEREFORE WE PROCEEDED TO PUSH TO MORE SHIELDY TUBES ON THIS PAD PER DUANE LEHNHARDT REQUEST.

NEXT URS CHECKED THE THICKNESSES ON THE TEST PADS, WHICH WERE:

TEST PAD NO. 1 : 1.65'

TEST PAD NO. 2 : 1.5'

IN SUMMARY, THE FOLLOWING WAS THE NECESSARY COMPACTING METHODS UTILIZED:

- A. SUBGRADE = 10 PASSES WITH CAT 563 SHEEPFOOT ROLLER
- B. TEST PAD NO. 1 = 6 PASSES WITH CAT 06C DOZER
2 PASSES WITH CASE 602B SMOOTH ROLLER
- C. TEST PAD NO. 1 FOR ADDITIONAL COMPACTION :
2 MORE PASSES WITH SMOOTH ROLLER
- D. TEST PAD NO. 2 = 6 PASSES WITH CAT 06C DOZER
= 2 PASSES WITH SMOOTH ROLLER
- E. TEST PAD NO. 2 WITH ADDITIONAL COMPACTION FOR
COMPACTION = 4 PASSES SHEEP FOOT
= 2 PASSES WITH SMOOTH ROLLER

I LEFT THE SITE AT 5:20 PM.

SHEET 4 OF 6

BY THOMAS A OSTRANDER TITLE ENGINEER

PROJECT DUNLOP REMEDIAL DESIGN

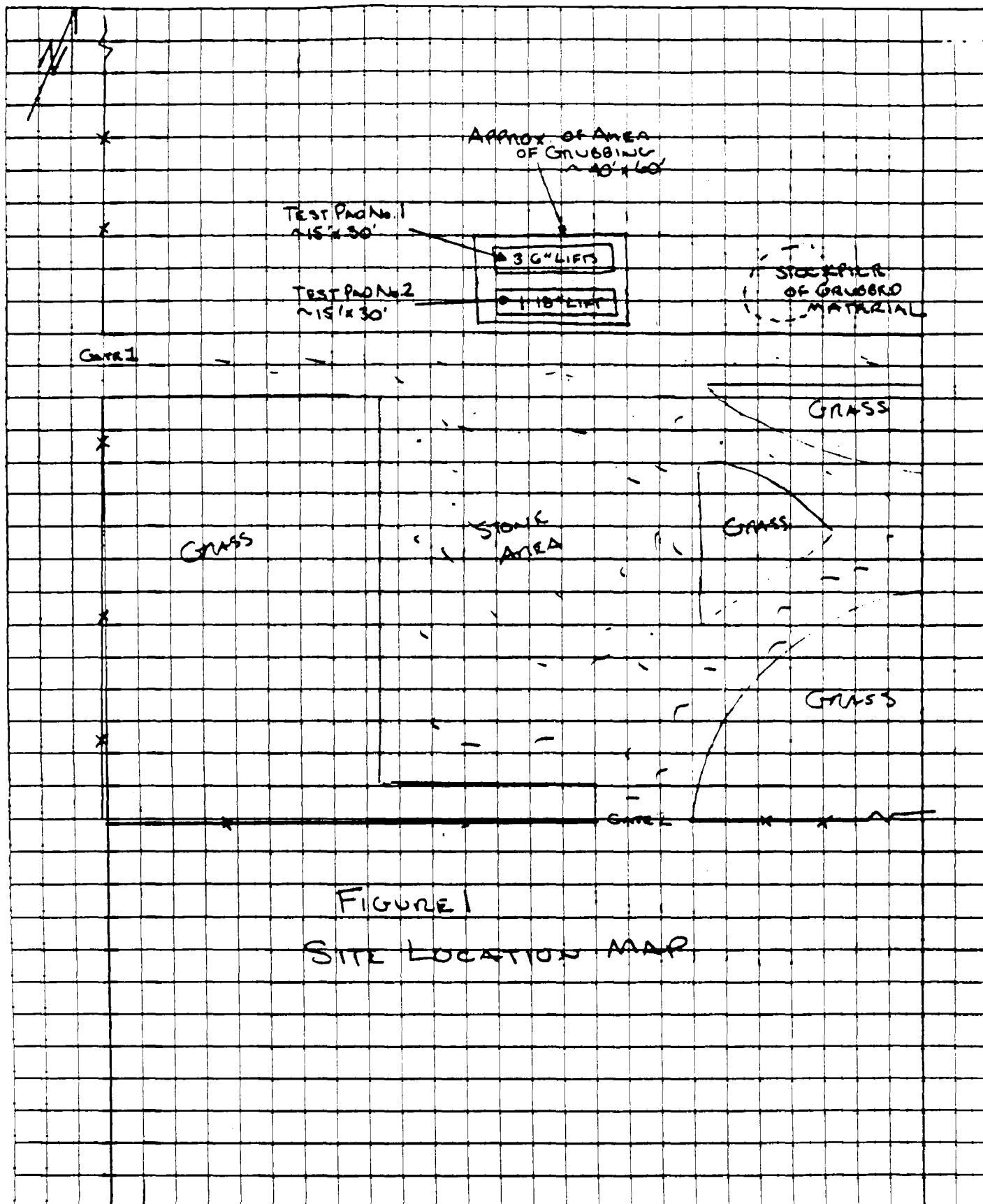
SHEET NO. OF

SUBJECT SITE FIGURE
NOT TO SCALE

JOB NO. 35296.02

MADE BY TAO DATE 7.21.92

CHKD. BY DATE



FIELD IN-PLACE DENSITY TEST REPORT

6 OF 6

TABLE 1



- ☐ 5 KNABNER ROAD, P.O. BOX 2198, BALLSTON SPA, NY 12020 518/888-7491
- ☐ 5-6167 SOUTH PARK AVENUE, P.O. BOX 0813, HAMBURG, NY 14075 716/848-8110
- ☐ 105 CORONA AVENUE, GROTON, NY 13073 807/888-6881
- ☐ 140 TELEGRAPH ROAD, P.O. BOX 297, MIDDLEPORT, NY 14108 716/735-3802
- ☐ 4287 WITMER ROAD, B.P.O. BOX 188, NIAGARA FALLS, NY 14305-0188 716/287-8881
- ☐ 535 SUMMIT POINT DRIVE, HENRIETTA, NY 14457 716/358-1880
- ☐ 35 NATIONAL ROAD, EDISON, NJ 08817 908/287-2224
- ☐ MORGANTOWN BUS. PARK, P.O. BOX 188, MORGANTOWN, PA 19543 215/288-8857

Project: Pinecroft LLC Report No: _____

Client: URS Date: 7-21-92

Contractor: _____ Job No.: ET-92 -

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	7-21	5'9"	110.2	14.9	82.8		SW corner of Test Pad Area SUBGRADE
2			112.2	15.7	84.4		RETEST of no. 1
3			109.3	17.7	87.1		CENTER of PAD
4		6'05"	113.2	13.0	90.2		PAD #1 TEST PAD NO. 1 LIFT NO. 1 (6")
5			114.3	13.6	92.7		" SHELBY TUBE LOCATION
6		5'95"	115.4	14.9	92.0		PAD #2 TEST PAD NO. 2 18" LIFT
7			117.3	12.9	93.5		" SHELBY TUBE LOCATION
8		5'45"	115.8	13.9	92.3		PAD #1 TEST PAD NO. 1 LIFT NO. 2 (6")
9			112.6	17.1	93.7		" SHELBY TUBE LOCATION
10		18' 156"	115.9	13.2	92.9		" TEST PAD NO. 1 LIFT NO. 3 (6")
11			116.7	14.1	93.1		" SHELBY TUBE LOCATION
12	✓		121.2	11.2	96.6		PAD #2 TEST TAKEN AT 12" DEPTH TEST PAD NO. 2 18" LIFT AFTER ADDITIONAL COMPACTION
13	✓		117.3	12.2	93.5		" SHELBY TUBE LOCATION
Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source				
✓	125.4	12.2	PROCTOR CURVE INFORMATION				
14	121.5	12.0	96.1%	→	PAD #2	TEST TAKEN AT 6" DEPTH	(6 INCH)
15	121.4	10.9	96.7	→	"	TEST TAKEN AT 6" DEPTH	(6 INCH)

Respectfully submitted

Remarks: _____

EMPIRE SOILS INVESTIGATIONS, INC.

Technician Time: 9:15 - 5:30

Technician: _____



CONSULTANTS
MAKING TECHNOLOGY WORK

DAILY CONSTRUCTION REPORT

DATE JULY 22, 1992

DAY S M T W TH F S

PROJECT DUNLOP REMEDIAL DESIGN
JOB NO. 3524602
CLIENT DUNLOP TIRE
CONTRACTOR NORTHEAST PAVING
PROJECT MANAGER CHARLES W. HURLEY

WEATHER

Brk Sun	Clear	Overcast	Rain	Snow
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TEMP.

70-72	72-80	80-70	70-60	60-50
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WIND

Still	Moder	High	Report No
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HUMIDITY

Dry	Moder	Humid
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AVERAGE FIELD FORCE 2			
Name of Contractor	Non-manual	Manual	Remarks
NORTHEAST PAVING		2 OPERATORS	
VISITORS			
Time 7:30 PM 8 AM 9 AM	Representing DUNNE LEONARD GLENN MAY JEFF BLOK	Representing URS CONSULTING NYSDEC EMPIRE SOILS	Remarks SITE VISIT SITE VISIT SOIL TECHNICIAN

EQUIPMENT AT THE SITE

1 TEN WHEELED PUMP TRUCK, CAT 950B FRONT END LOADER, CAT D6C
DOZER, CAT CP563 SHARPFOOT ROLLER W/ 6" TORS AND A CASE 6020
SMOOTH ROLLER

CONSTRUCTION ACTIVITIES

I ARRIVED ON SITE AT 7:30 AM AND THE CONTRACTOR
ARRIVED BY 7:45 AM.

AT 8 AM THE CONTRACTOR PROCEEDED TO GRUB AND LEVEL
THE PROPOSED LOCATION FOR TEST PAD NO. 3 (TWO 9 INCH
LIFTS). REFER TO FIGURE 1 THE LOCATION.

BY 8:40 AM NE PAVING STARTED TO COMPACT THE
SUBGRADE WITH THE SHARPFOOT, WHILE IT WAS BEING
COMPACTED, IT WAS DETERMINED THAT THE LOCATION
WAS TOO SATURATED WITH WATER. THEREFORE, DUNNE
LEONARD DECIDED TO RELOCATE TEST PAD NO. 3
NEAR TEST PADS NO. 1 & 2 (REFER TO FIGURE 1).

AT 9:15 AM THE CONTRACTOR STARTED TO GRUB AND
LEVEL THE NEW LOCATION FOR TEST PAD NO. 3.

DAILY CONSTRUCTION REPORT

(Continuation Sheet)

PROJECT DUNLOP REMEDIAL DESIGN REPORT NO. 2
JOB NO. 35246.02 DATE JULY 22, 1992

CONSTRUCTION ACTIVITIES (Continued)

BY 9:35AM THE CONTRACTOR PROCEDURE TO COMPACT ^{THE} SUBGRADE WITH 10 PASSES WITH THE SHEEPFOOT. WHEN FEASIBLE, I INSTRUCTED EMPIRE TO TAKE A IPD TEST OF THE SUBGRADE. THE RESULT WAS 69% COMPACTION AND 23% MOISTURE, BUT DUANE LEMHART SAID THAT EVEN WITH MORE COMPACTION THE RESULTS WOULD NOT IMPROVE DUE TO THE PRESENCE OF WASTE IN THE SUBGRADE. THEREFORE HE GAVE THE GO AHEAD FOR THE CONTRACTOR TO START PLACING LIFT NO. 1 OF LOW PERM SOIL FOR TEST PAD NO. 3. (9 INCH)

AT 10:30AM THE CONTRACTOR STARTED TO COMPACT LIFT NO. 1 WITH 6 PASSES WITH THE OGC DOZEN AND 2 PASSES WITH THE SMOOTH ROLLER.

BY 10:45AM EMPIRE TOOK TWO (2) IPDS; THEY PASSED. REFER TO EMPIRE IPD TEST REPORT FOR DETAIL ON TODAY IPD TESTS. (TABLE 1) THEN THE CONTRACTOR PROCEDURE TO TAKE 4 ADDITIONAL PASSES WITH THE DOZEN AND 2 PASSES WITH THE SMOOTH ROLLER PER DUANE'S REQUEST. BEFORE THE CONTRACTOR PROCEEDED WITH THAT, WE TOOK 2 SHREDBY TUBES.

EMPIRE RETESTED LIFT NO. 1. THE RESULT WERE NOT MUCH DIFFERENT FROM THE FIRST RESULTS.

AT 11:05AM THE CONTRACTOR STARTED TO PLACE LIFT NO. 2 ON TEST PAD NO. 3. WHEN THE CONTRACTOR WAS FINISHED COMPACTING THIS LIFT AT 11:35AM, EMPIRE TESTED IT. WE HAD OUR FAILING % COMPACTION RESULT; THEREFORE I INSTRUCTED THE CONTRACTOR TO TAKE TWO (2) ADDITIONAL PASSES WITH THE SMOOTH ROLLER. WHEN FEASIBLE, WE RETESTED THE LIFT AND THIS TIME BOTH IPD TESTS PASSED. THEN WE PUSHED 2 SHREDBY TUBES IN THIS FINAL LIFT.

SHEET 2 OF 5

BY THOMAS A OSTROM TITLE ENGINEER

DAILY CONSTRUCTION REPORT

(Continuation Sheet)

PROJECT DUNLOP REMEDIATION DESIGN REPORT NO. 2
JOB NO. 35296.02 DATE JULY 22, 1992

CONSTRUCTION ACTIVITIES (Continued)

AT 11:45AM THE CONTRACTOR PROCEEDED THE RECOMPACT THE LIFT WITH 4 ADDITIONAL PASSES WITH THE SHEEPFOOT AND 2 PASSES WITH THE SMOOTH ROLLER. WITHIN FEASIBLE, EMPIRE TOOK 2 IPD TESTS. THE IPD TEST RESULTS WERE PASSING, AND WERE NOT MUCH OF DIFFERENT FROM THE FIRST TESTS FOR THIS LIFT.

AT 12:15PM EMPIRE SOIL LEFT THE SITE AND AT 12:45PM I LEFT THE SITE FOR LUNCH ONLY AFTER FINISHING PREPPING THE SHLBY TUBES FOR TRANSPORT.

SUMMARY OF COMPACTION METHODS

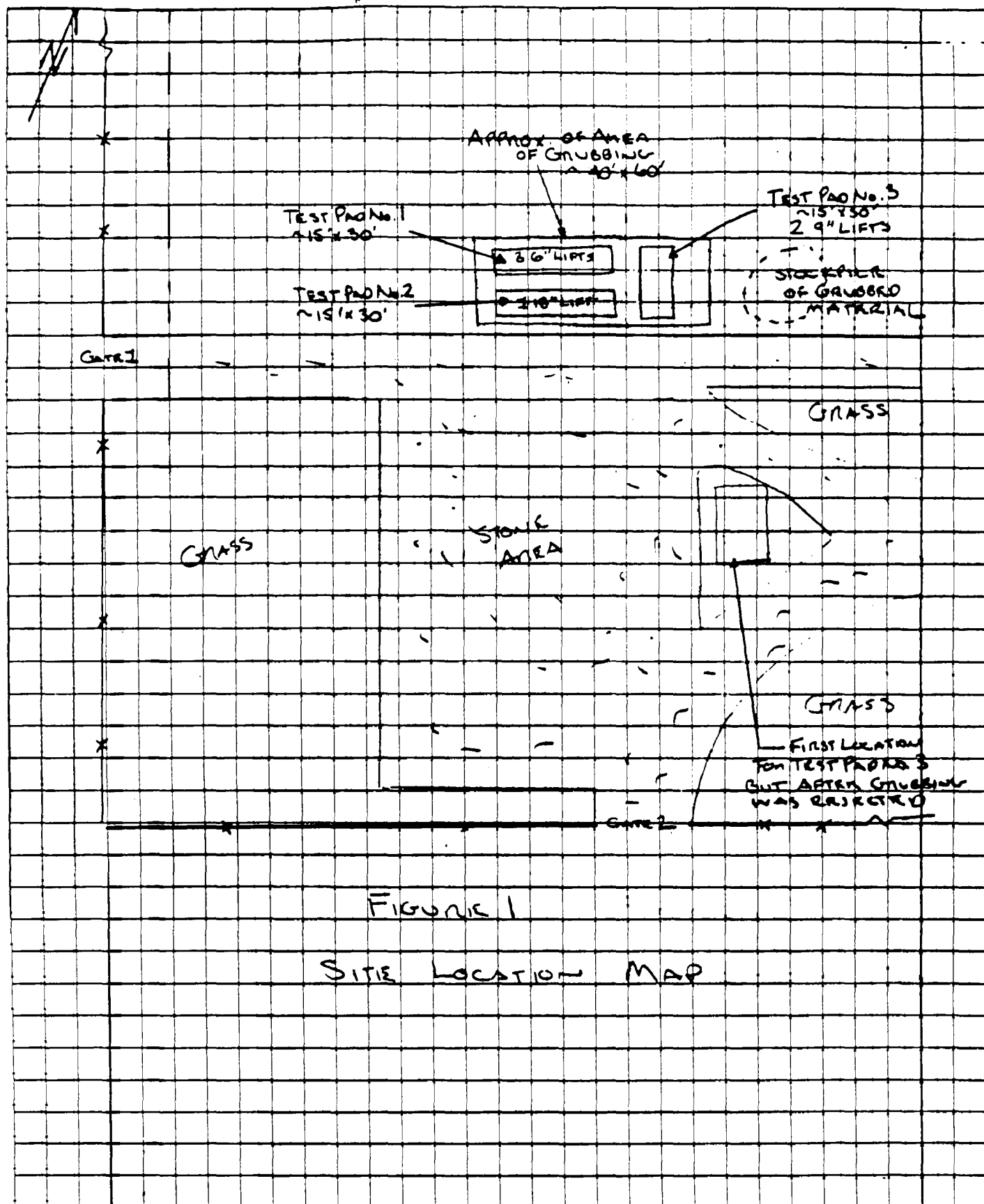
SUBGRADE : 10 PASSES WITH CAT CP563
SHEEPFOOT ROLLER

TEST PAD NO. 3 9 INCH LIFTS : 6 PASSES WITH
CAT DGC DOZER (TRACKING)
2 PASSES WITH CASE 602B
SMOOTH ROLLER

SHEET 3 OF 5

BY THOMAS A OSTRANDER TITLE ENGINEER

PROJECT DUNLOP REMEDIATION DESIGN
 SUBJECT SITE FIGURE
 NOT TO SCALE



FIELD IN-PLACE DENSITY TEST REPORT

5 of 5



- ☐ 1 KOWDNER ROAD, P.O. BOX 8195, BALLSTON SPA, NY 12020 516/885-7401
- ☐ 8-6167 SOUTH PARK AVENUE, P.O. BOX 5812, HAMMILL, NY 14078 716/848-8110
- ☐ 105 CORONA AVENUE, GRIFFIN, NY 13073 827/885-8881
- ☐ 145 TELEGRAPH ROAD, P.O. BOX 187, MIDDLEPORT, NY 14105 716/755-8882
- ☐ 4887 WYOMER ROAD, S.P.O. BOX 125, NIAGARA FALLS, NY 14056-0125 716/887-8881
- ☐ 888 SUNSET POINT DRIVE, HENRIETTA, NY 14457 716/888-1880
- ☐ 25 NATIONAL ROAD, EDISON, NJ 08817 856/887-8884
- ☐ MORGANTOWN BUS. PARK, P.O. BOX 125, MORGANTOWN, PA 15043 716/298-8887

Project: Deer Creek Twp Co. Report No: _____
 Client: URS Date: 7.22.92
 Contractor: NORDEAST PAVING Job No.: RT-92-

Test No.	Date of Test	Depth or Elevation	In-place Density (pcf)	In-place Moisture (%)	% Compaction	Proctor Code	Location and Remarks
1	7.22	SC	84.6	23.2	69.0		Pao # 3 SUBGRADE
2		9" SC	114.3	14.6	91.1		LIFT No. 1 TEST Pao No. 3
3		↓	115.0	14.6	91.7		9 INCH LIFT " SHELBY TUBE LOCATION
4		↓	115.0	15.3	91.7		TEST Pao No. 3 LIFT No. 1
5		↓	114.4	15.4	91.2		AFTER ADDITIONAL COMPACTION
6		10" AS	112.5	14.2	89.7		TEST Pao No. 3 LIFT No. 2
7		↓	114.1	14.0	91.0		" RETEST # 6 9 INCH LIFT
8		↓	116.4	13.2	92.8		"
9		↓	116.7	13.0	93.1		TEST Pao No. 3 LIFT No. 2
10		↓	114.2	12.1	91.0		AFTER ADDITIONAL COMPACTION
Proctor Code	Maximum Density (pcf)	Optimum Moisture (%)	Material Type and Source				
	125.4	12.2	Based on info of same area Proctor Information				

Respectfully submitted,

Remarks: A REP OF THE CLIENT WAS EMPIRE SOILS INVESTIGATIONS, INC.

PRESENT & INFORMED ME ALL TEST RESULTS.

Technician Time: 9:00 12:30

Technician: J. [Signature]

EMPIRE SOILS INVESTIGATIONS, INC. SUBSURFACE EXPLORATION & CONSTRUCTION QUALITY CONTROL & ENGINEERING SPECIALTY SERVICES

APPENDIX V

**OUTLINE OF MINIMUM REQUIREMENTS FOR THE
SITE HEALTH AND SAFETY PLAN**



DUNLOP TIRE CORPORATION
TONAWANDA, NEW YORK

**OUTLINE OF MINIMUM REQUIREMENTS
FOR THE
SITE HEALTH & SAFETY PLAN
FOR THE CLOSURE OF
INACTIVE WASTE SITES No's 915018 A, B, & C**

Submitted to:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 MICHIGAN AVENUE
BUFFALO, NEW YORK 14203

MARCH 1993

Prepared By:
URS Consultants, Inc.
282 Delaware Avenue
Buffalo, New York 14202

DUNLOP TIRE CORPORATION

TONAWANDA, NEW YORK

**OUTLINE OF MINIMUM REQUIREMENTS FOR THE
SITE HEALTH AND SAFETY PLAN
FOR THE CLOSURE OF
INACTIVE WASTE SITES NUMBERS 915018 A, B, AND C**

**SUBMITTED TO
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**270 MICHIGAN AVENUE
BUFFALO, NEW YORK 14203**

MARCH 1993

PREPARED BY:

**URS CONSULTANTS, INC.
282 DELAWARE AVENUE
BUFFALO, NEW YORK 14202**

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ATTACHMENTS

- A **Dunlop Safety Guidelines for Contractors**
- B **Standard Operating Safety Procedures**
- C **Confined Space Safety Requirements**

1.0 INTRODUCTION

1.1 Project Description

Pursuant to a Consent Order with the New York State Department of Environmental Conservation (NYSDEC), Dunlop Tire Corporation is proceeding with the closure of three inactive waste sites at its Tonawanda, New York facility. A Conceptual Remedial Action Closure Plan dated November 1992 has been approved by NYSDEC for these sites (which are designated Nos. 915018 A, B, & C).

The Closure Plan, in summary, consists of capping the sites with an 18-inch low permeability soil cover and then protecting that cover with a 6-inch overlying soil layer that will support a vegetative cover. Project specific construction activities anticipated are listed below:

- Mobilization/Demobilization
- Construction of Decontamination Pad and Contingency Waste Storage Area
- Fence Removal and Reconstruction
- Site Preparation (clearing, grubbing, stripping/stockpiling topsoil)
- Access Road Construction
- Removal of Tires and Other Inappropriate Waste
- Construction of Drainage Swales
- Modifications to Existing Drainage Structures
- Consolidation of Waste Areas
- Excavation and Loading of Low Permeability Soil
- Hauling, Placement, and Compaction of Low Permeability Soil
- Spreading of Vegetative Support Layer
- Hydroseeding/Landscaping
- Dust Control
- Street Cleaning

1.2 Purpose and Scope

The purpose of this Outline of Minimum Requirements is to set forth, in an orderly and logical fashion, the minimum requirements for health, safety, and emergency response to be followed during remedial construction activities, in accordance with OSHA regulations 29 CFR 1910.120(b).

An important requirement of 29 CFR 1910.120(b) is that "Each employer shall develop and implement a safety and health program for its employees..." The selected Contractor must prepare its own Site Health and Safety Plan (SHASP). This outline will be a requirement of the Contract Specifications. This outline will be included as an appendix to the specifications to provide the Contractor with the minimum requirements which need to be addressed in his submittal.

The Contractor's Contingency Plan (separate document) must be referred to for the health and safety requirements to be followed in the event that waste of a more hazardous nature is unexpectedly encountered on these sites.

In addition, the Contractor will be responsible for complying with Dunlop's Safety Guidelines for Contractors. These guidelines are included as Attachment A to this document.

The procedures presented in this outline generally comply with the following regulatory or guidance documents:

- 29 CFR 1910, General Industry, Occupational Safety and Health Administration (OSHA) Safety and Health Standards.
- 29 CFR 1926, Construction Industry, OSHA Safety and Health Standards
- USEPA Order 1440.2, Health and Safety Requirements for Employees Engaged in Field Activities, July 12, 1981.

- NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985.
- Standard Operating Safety Guides, United States Environmental Protection Agency, Office of Emergency and Remedial Response, November 1984.
- "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1992 and 1993". American Conference of Governmental Industry Hygienists, Cincinnati, Ohio, 1992.
- "Guide to Occupational Exposure Values." American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 1992.
- Department of Labor, Occupational Safety and Health Administration, 29 CFR, Part 1910, Air Contaminants; Final Rule, January 19, 1989.
- "Pocket Guide to Chemical Hazards." National Institute for Occupational Safety and Health and Occupational Safety and Health Administration, Publication No. 90-117, Cincinnati, Ohio, June 1990.

1.3 Project Management Organization

Implementation of this the SHASP will involve the participation of the following:

- NYSDEC
- NYSDOH
- Dunlop
- URS
- Contractor

Figure 1-1 presents an organization chart of the principal personnel responsible for implementation of the plan. The duties and responsibilities of each project participant is discussed in the following subsections.

1.3.1 Regulatory Agency

These sites are being closed under a closure plan approved by NYSDEC. The Project Manager, Mr. Glenn May, will be NYSDEC's representative concerning health and safety procedures.

1.3.2 Owner

Dunlop Tire Corporation, as the Owner, is performing the site closures. Dunlop's Central Environmental Engineer, Mr. Daniel Pyanowski, will represent Dunlop in implementation of the project. He will be NYSDEC's contact. URS and the Contractor will report to Mr. Pyanowski.

1.3.3 Engineer

Dunlop has retained the services of URS Consultants, Inc. to provide construction administration services for this project. As discussed in the Project Quality Assurance/Quality Control (QA/QC) Plan, URS will be responsible for reviewing the Contractor's submittals and for documentation of site activities. In those capacities, URS will be responsible for review of the Contractor's Health and Safety Plan to be submitted prior to the start of construction and will provide onsite inspection of construction activities as Dunlop's representative.

1.3.4 Contractor

It will be the Contractor's responsibility to provide all facilities, personnel, and equipment necessary to protect his personnel from physical injury and potential adverse health effects due to exposure to chemical hazards. It is necessary, therefore, for the Contractor to develop the methods and procedures for doing so. A requirement of the Contract Specifications will be that

ORGANIZATION CHART - HEALTH AND SAFETY PLAN

CLOSURE OF
SITES 915018 A, B, C

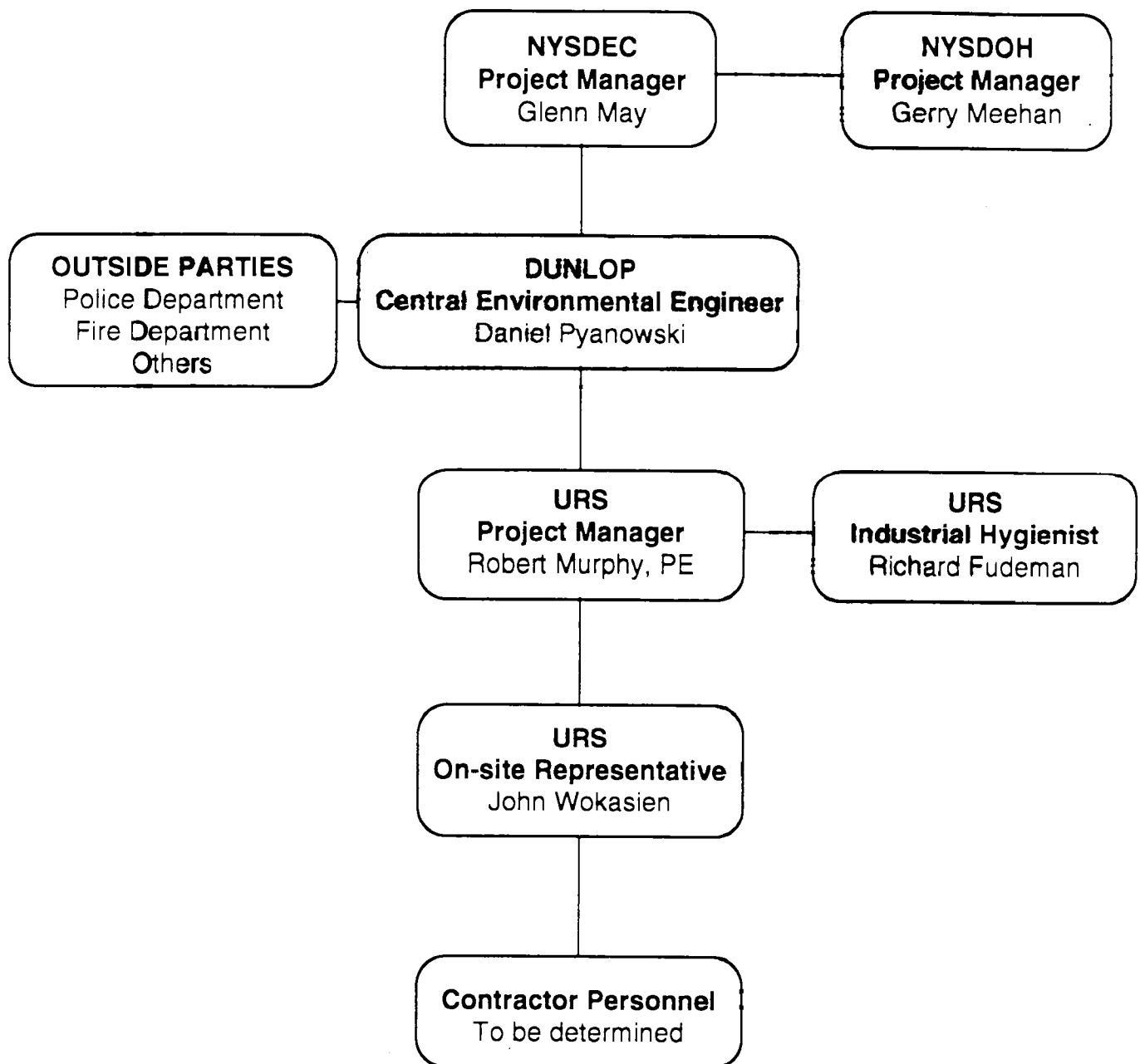


FIGURE 1-1

the Contractor develops and submits a Site Health and Safety Plan. That SHASP shall address the issues summarized in the Contract Specifications.

2.0 SITE DESCRIPTION

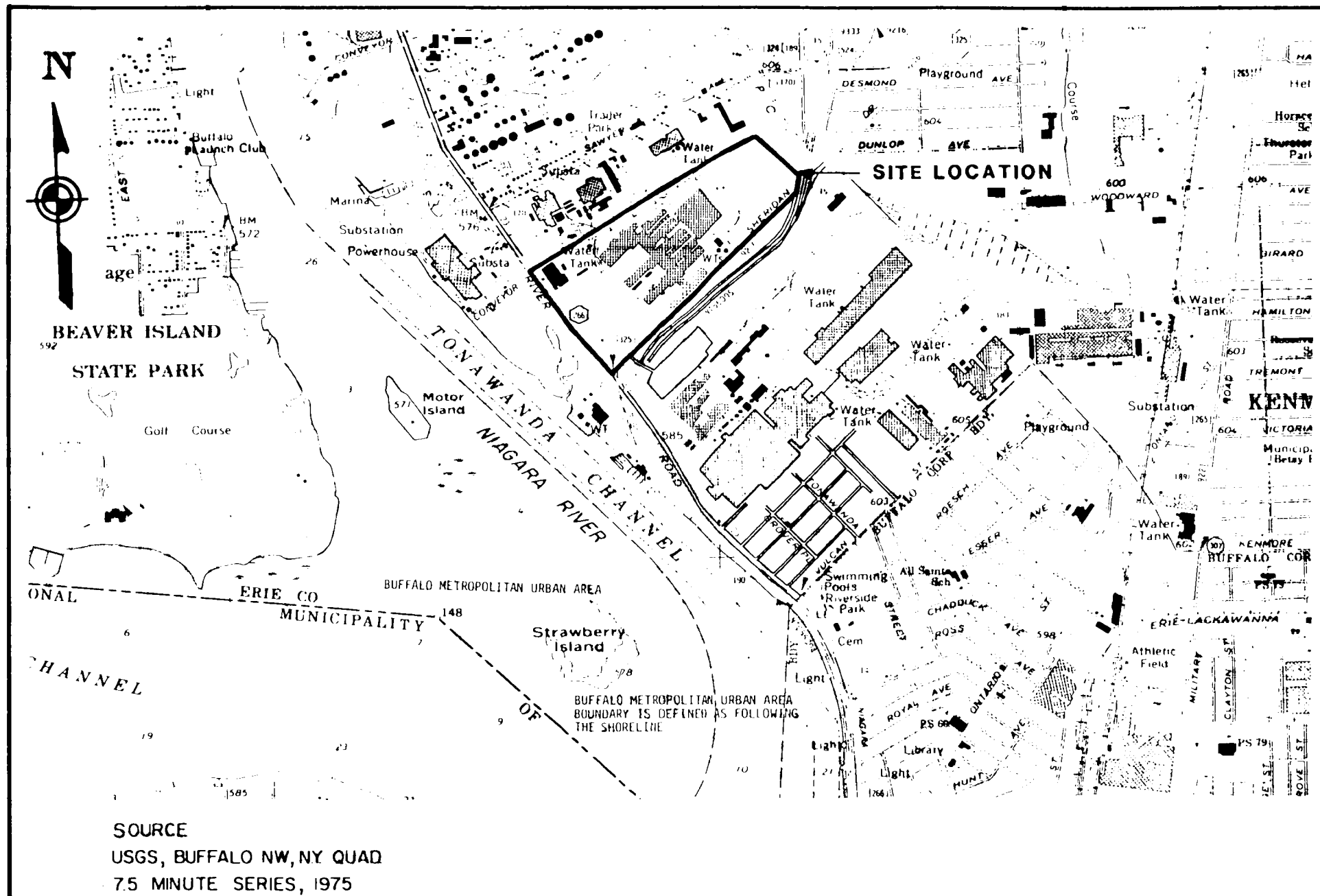
The Dunlop Tire Corporation plant is located in the Town of Tonawanda, Erie County, State of New York (Figure 2-1). The 130-acre plant site is bordered on the southwest by River Road, on the northwest by railroad tracks, on the southeast by Sheridan Drive, and on the northeast by Niagara Mohawk property and Kenmore Avenue (Figure 2-2). The general area is characterized as industrial, but there is a pocket of residential development 1,000 feet northeast of the eastern disposal site.

The topography is flat, and much of the plant site is served by storm drains which discharge to the Niagara River after passing through a floating/trapping pond. Ground elevation ranges from about 605 feet on the east end of the property to 585 feet on the western end.

The Niagara River lies less than 1,500 feet to the west. Groundwater flow is toward the River in a generally west to southwest direction.

The location and topography of Inactive Waste Sites A, B, and C is shown on the Contract Drawings.

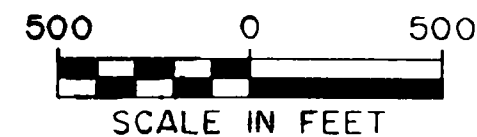
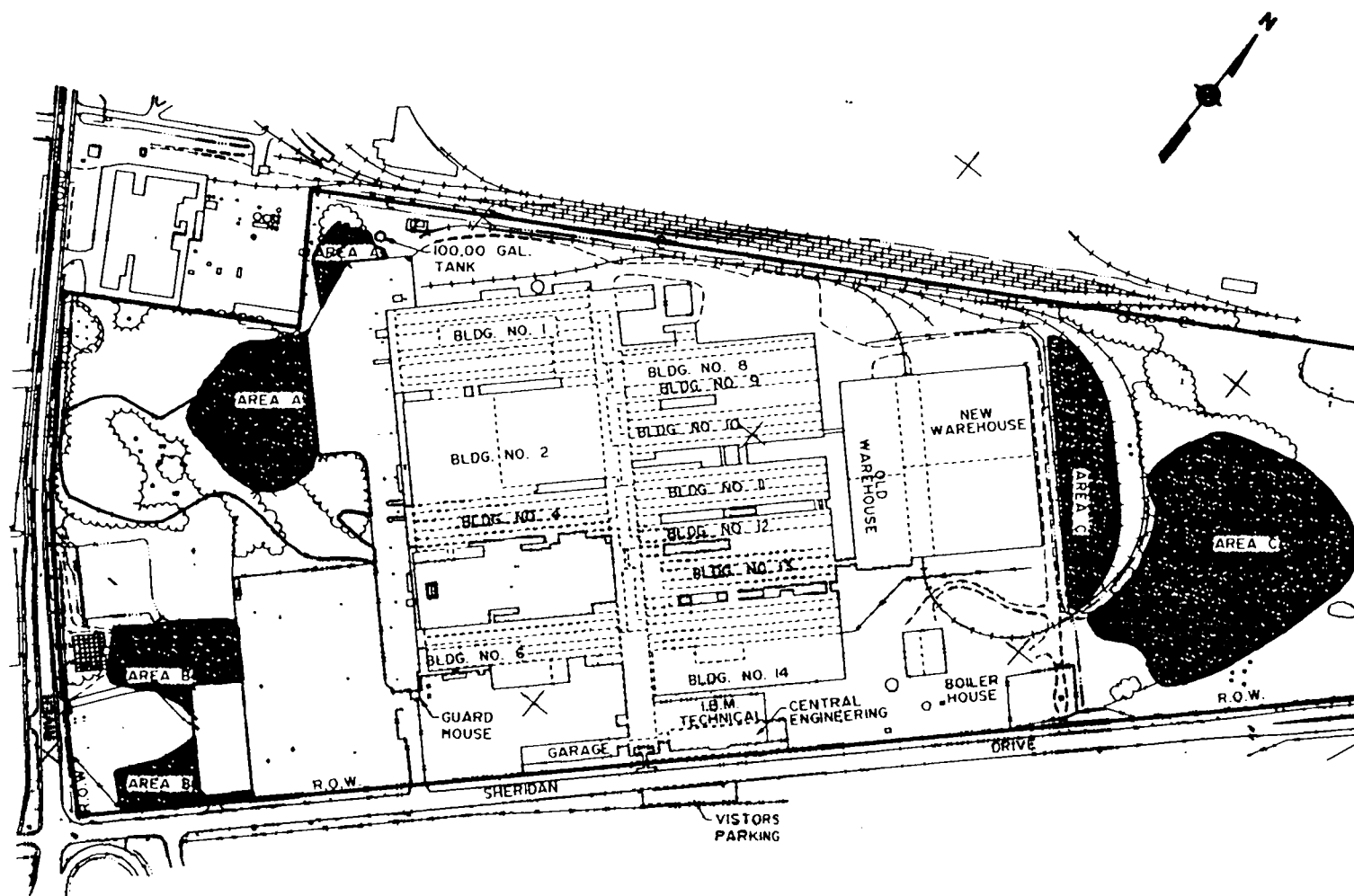
The nature of the site's waste, as described in the Report of Field Investigation and Data Analysis, April 1992, is construction and demolition debris, silt, ash, slag, carbon black, asphalt, coal, and rubber tires. There is also a tire disposal area in Area A. Some empty, deteriorated drums were also observed on the ground surface in Area A. These tires and drums will be removed for offsite disposal during this closure.



URS
 CONSULTANTS, INC.

**DUNLOP TIRE CORPORATION
 SITE LOCATION MAP**

FIGURE 2-1



3.0 SITE HAZARD EVALUATION

3.1 Chemical Hazards

The health and safety characteristics of selected chemicals detected at the Dunlop Tire Corporation Inactive Waste Sites are listed in Table 3-1. The risk of exposure to these chemicals can be by the dermal or respiratory route, depending on the type of compound and intrusive activity being conducted. Table 3-1 also presents Permissible Exposure Limits (PELs) as eight-hour Time-Weighted Averages (TWAs) based on 29 CFR Part 1910, Air Contaminants; Final Rule, January 19, 1989 as well as the maximum concentrations detected in both groundwater and sediment samples at the sites. The PELs are provided as an indication of relative toxicity. These values were also considered in development of air monitoring action levels.

3.2 Physical Hazards

Table 3-2 presents the physical hazards associated with the major remedial construction activities to take place and preventative measures.

Additional Standard Operating Safety Procedures for onsite personnel can be found in Attachment B.

TABLE 3-1
HAZARD CHARACTERISTICS OF SELECTED CHEMICALS DETECTED AT THE DUNLOP TIRE
CORPORATION INACTIVE WASTE SITES

Substance	Toxicity/Carcinogenicity	Permissible Exposure Limits (PELs)*	Maximum Detected Concentrations**
Benzene	Suspected human carcinogen. Moderately toxic by ingestion, inhalation, and skin adsorption. Irritant to of eyes, nose, and throat.	3 mg/m ³ 15 mg/m ³ (STEL)(1)	0.005 ppm - Groundwater 0.002 ppm - Sediment
2-Butanone (Methyl Ethyl Ketone)	Narcotic by inhalation. Experimental teratogen. Moderately toxic by ingestion and dermal routes. Strong irritant. Affects CNS.	590 mg/m ³ 885 mg/m ³ (STEL)(1)	0.007 ppm - Sediment
1,2-Dichloroethylene	Moderately toxic by ingestion, inhalation, and skin contact. Irritant and narcotic in high concentrations.	790 mg/m ³	0.006 ppm - Groundwater 0.022 ppm - Sediment
1,1,1-Trichloroethane	Irritating to eyes and tissue. Narcotic in high concentrations. Causes proarrhythmic activity.	1,900 mg/m ³ 2,450 mg/m ³ (STEL)(1)	0.08 ppm - Groundwater 0.005 ppm - Sediment
Trichloroethylene	Toxic by inhalation.	270 mg/m ³ 1,080 mg/m ³ (STEL)(1)	0.006 ppm - Sediment
Anthracene	A known carcinogen. Affects the respiratory system, lungs, bladder, kidneys, and skin.	0.2 mg/m ³ (2)	0.94 ppm - Sediment
Benzo(a)anthracene	Irritant to stomach, skin, and eyes.	No exposure limits set.	1.9 ppm - Sediment
Benzo(a)pyrene	Toxic by inhalation. Suspected human carcinogen.	0.2 mg/m ³	1.3 ppm - Sediment
Benzo(b)fluoranthene	Causes irritation of lungs, breathing difficulty.	No exposure limits set.	2.2 ppm - Sediment
Chrysene	Suspected human carcinogen.	0.2 mg/m ³	1.8 ppm - Sediment
Phenanthrene	Known carcinogen.	0.2 mg/m ³ (2)	3.3 ppm - Sediment

TABLE 3-1 (Continued)

Substance	Toxicity/Carcinogenicity	Permissible Exposure Limits (PELs)*	Maximum Detected Concentrations**
Arsenic (Elemental)	Poison by subcutaneous, intramuscular, and intraperitoneal routes. Humans carcinogen.	0.5 mg/m ³ (Organic) (2) 0.01 mg/m ³ (Inorganic) 0.002 mg/m ³ (STEL) (1)	0.07 ppm - Groundwater 18 ppm - Sediment
Cadmium (Dusts and salts)	Highly toxic, especially by inhalation of dust or fume. A known OSHA carcinogen. Ingestion usually induces a strong emetic action.	0.2 mg/m ³ (2) 0.6 mg/m ³ (Ceiling) (3)	0.33 ppm - Groundwater 14 ppm - Sediment
Chromium (Trivalent)	Experimental carcinogen. Compounds have corrosive action on skin and mucous membranes.	0.5 mg/m ³ (Trivalent)	0.37 ppm - Groundwater 33 ppm - Sediment
Copper (Dusts and mists)	Respiratory and skin irritant.	1.0 mg/m ³	1.4 ppm - Groundwater 46 ppm - Sediment
Lead (Inorganic dust and fumes)	Toxic by ingestion and inhalation of dust or fumes. Lead poisoning is common. Three types include alimentary, neuromotor, and encephalic. Some lead compounds are experimental carcinogens of the lungs and kidneys.	0.05 mg/m ³	17.2 ppm - Groundwater 1,750 ppm - Sediment
Nickel (Elemental)	Poison by ingestion, intratracheal, and intravenous routes. May cause dermatitis. Experimental carcinogen.	1.0 mg/m ³ (2)	0.55 ppm - Groundwater 59 ppm - Sediment
Zinc (Zinc oxide dust)	Low toxicity. Zinc chromates and arsenates are experimental carcinogens.	10 mg/m ³ (Total) 5 mg/m ³ (Respirable)	16 ppm - Groundwater 778 ppm - Sediment

* PELs are 8-hour Time-Weighted Averages (TWAs) unless otherwise noted.

** Maximum detected concentrations are from samples collected by URS in Spring 1991.

TABLE 3-1 (Continued)

Notes

- (1) STEL-Short Term Exposure Limit - 15 minute TWA exposure which should not be exceeded at any time during a work day.
- (2) **Confirmed human carcinogen:** The agent is carcinogenic to humans based on the findings of epidemiologic studies of, or convincing clinical evidence in, exposed humans.
- (3) Ceiling - The concentration that should not be exceeded during any part of the working exposure.

References

29 CFR, Part 1910, Air Contaminants; Final Rule, January 19, 1989.

"Guide to Occupational Exposure Values." American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 1992.

"Pocket Guide to Chemical Hazards." National Institute for Occupational Safety and Health and Occupational Safety and Health Administration, Publication No. 78-210, Cincinnati, Ohio, September 1985.

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Hawley, Gessner G. The Condensed Chemical Dictionary, Tenth Edition, New York, Van Nostrand Reinhold, 1981.

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TABLE 3-2

ANTICIPATED CONSTRUCTION ACTIVITIES AND ASSOCIATED HAZARDS AND PREVENTION

CONSTRUCTION ACTIVITIES	POTENTIAL HAZARDS	PREVENTION/MITIGATION
Mobilization/Demobilization	Equipment Incidents	Provide spotter when moving equipment. Functional back-up alarms on equipment.
	Loading/Unloading Incidents (Falling & slipping overhead loads)	Use proper crane signaling. Personnel & vehicles not permitted under overhead loads. Do not pass loads over personnel in trenches. Proper inspection of slings, cables, pulleys, hoods, clamps, and heating equipment. Do not exceed maximum load rating. Provide level loading area. Appropriate warning signs. Wear required Personal Protective Equipment (PPE).
	Cable breakage	Keep clear of cables subject to tension.
Excavation/Clearing/Grubbing/Debris Removal/Stripping/Stockpiling	Equipment backing into or over personnel	Functional back-up alarms on construction equipment. Provide spotter when moving equipment.
	Equipment turning over	Equipment provided with canopy guards and roll-over protective structures (ROPS). Proper training of all construction equipment operators.
	Dangerous moving parts	Perform daily inspection of mechanized equipment. Keep guards & barriers on all rotating, reciprocating, and transverse points of operation and transmission.
	Noise	Wear hearing protection.
	Dust	Use respiratory protection.

TABLE 3-2 (Continued)

CONSTRUCTION ACTIVITIES	POTENTIAL HAZARDS	PREVENTION/MITIGATION
Excavation/Clearing/Grubbing/Debris Removal/Stripping/Stockpiling	Airborne contaminants	Monitor for respiratory contaminants. Use respiratory protection during elevated levels . Competent person to perform air monitoring.
	Power tool injuries	Proper insulation of tools & extension wires. Use Ground Fault Circuit Interrupters (GFCI) in wet areas. Training on electrical safety. Wear eye protection. Lock-out/Tag-out procedure for electrical safety.
	Engulfment from excavation activities	Proper shoring required. Competent person to ensure safety of excavation, daily.
	Buried drum uncovered	Monitor for hazards/contamination. Initiate Contingency Plan.
	Slips, trips, falls	Avoid wet areas and debris. Do not walk through puddles or climb over debris. Wear proper foot protection with good treads and traction.
	Falling objects	Wear head protection (hard hats).
	Encountering buried objects	Cease intrusive activity. Initiate Contingency Plan.
	Encountered utilities	Coordinate utility clearance. Perform area inspection to identify subsurface and overhead utilities through the presence of manholes, pull boxes, valve boxes, utility markers, vent risers, etc.
Dump Truck Loading/Transfer/Unloading	Dust	Wear respiratory protection. Wear eye protection. Wet down areas of excessive dust and apply dust control measures. Haul materials in properly tarped containers/trucks.

TABLE 3-2 (Continued)

CONSTRUCTION ACTIVITIES	POTENTIAL HAZARDS	PREVENTION/MITIGATION
Dump Truck Loading/Transfer/Unloading	Equipment backing into or over personnel	Functional back-up alarms on dump trucks & portable construction equipment . Provide spotter when backing up or moving dump trucks.
	Noise	Wear hearing protection
	Crushing of driver	Driver not permitted in cab of dump trucks while loading is ongoing. Driver to remain at safe distance in a secure area away from loading operations.
	Loss of load or spillage onto others	Driver to inspect load for stability, evenness, compactness, and cover load with tarp.
Placement/Spreading/Compaction	Dust	Wear respiratory protection. Wear eye protection. Wet down areas of excessive dust and apply dust control measures. Haul materials in properly tarped containers/trucks.
	Equipment backing into or over personnel	Functional back-up alarms on dump trucks & portable construction equipment . Provide spotter when backing up or moving dump trucks.
	Noise	Wear hearing protection.
Street Cleaning	Dust	Wear respiratory protection. Wear eye protection. Wet down areas of excessive dust and apply dust control measures.
General Site Hazards: Working at an Operational Facility	Moving traffic and equipment	Be alert for moving traffic. Employ traffic control devices. Coordinate with facility personnel.

TABLE 3-2 (Continued)

CONSTRUCTION ACTIVITIES	POTENTIAL HAZARDS	PREVENTION/MITIGATION
Working at an Operational Facility	Interference with facility's operations	Conduct work in such a way as to not interfere with operations . Abide by rules and regulations of facility while on plant property. Coordinate with facility personnel.
General	Heat Stress	Prevent, monitor for, treat as necessary. Provide adequate break periods, shelter, and drinking water as necessary.
General	Cold Stress	Prevent, monitor for, treat as necessary. Provide adequate clothing and shelter.
General	Fire	Minimize fire risk by using non-sparking tools. Have fire extinguishers available. Remove sources of ignition. Use explosion proof instruments.

4.0 SITE CONTROL

In order to keep unauthorized personnel from entering the active work areas during intrusive construction activities without proper protective equipment, and for good control of overall site safety, three work zones will be established. The work zones are the Support Zone, Contamination Reduction Zone, and Exclusion Zone. These zones will be marked with highly visible barrier tape and flagging, appropriate traffic barriers, and signs. Actual zone dimensions will be determined by optimal size of work area and by local obstructions.

4.1 Support Zone

The Support Zone will be where support facilities such as the office and equipment storage trailer will be located. This location is indicated on the Contract Drawings.

The office and equipment storage trailer will contain a telephone, two-way radio, personal protective equipment (disposable suits, gloves, boots, etc.), first aid kit, fire extinguisher, stretcher, 50% solution of fruit punch or the like in water (or plain drinking water), and special materials and equipment which may be required in the event of unanticipated wastes being encountered, as discussed in the Contingency Plan.

4.2 Contamination Reduction Zones

A Contamination Reduction Zone with personnel and equipment decontamination facilities will be established between the Exclusion Zone and Support Zone. It is anticipated that these decontamination facilities will be mobile so that they can be established near the various intrusive work zones, as necessary.

4.3 Exclusion Zones

The Exclusion Zone is the area around each active intrusive work area. The exact size of the active work Exclusion Zones will be determined by optimal size of work area and by local

obstructions. Access into the Exclusion Zone will be restricted and high visibility barrier tape or flagging and signs warning unauthorized personnel will be utilized.

4.4 Site Visitation

It is expected that officials from the NYSDEC and other regulating bodies will visit the site during operations. It is also possible that an OSHA representative will wish to inspect the site. All such officials must meet the same requirements as onsite workers (40 hour OSHA-approved training, site-specific training, and medical surveillance) before going into the Contamination Reduction Zones or Exclusion Zones. Visitors other than NYSDEC or OSHA representatives will be subject to the additional requirements of having to receive written permission from the Dunlop Tire Corporation to conduct a site visit for presentation to the Contractor. In addition, URS will inform Dunlop of NYSDEC's or OSHA's presence whenever they visit the site. A Daily Site Visitors Log will be kept by the Contractor, and all visitors to the site will sign in and provide their affiliation, the date of visit, arrival time, departure time, and purpose of visit. All visitors must supply their own proper protective equipment and will be required to pass an irritant smoke respirator fit test.

5.0 PERSONAL PROTECTION

Since personnel working on site may encounter elevated levels of hazardous airborne contaminants released during intrusive construction activities, or may come in contact with contaminants in soils, varying levels of protection must be available. It is anticipated that at least Level D protection will be utilized during non-intrusive activities and Level D-Modified protection will be utilized during intrusive activities. Components of all applicable levels of personal protection are listed in Table 5-1. Planned levels of protection for various activities and locations are given in Table 5-2.

The Contractor's Site Health and Safety Officer (SHSO) will be responsible for determining conditions which would require an upgrade in personal protection and will direct the workers accordingly.

If necessary, Level C respiratory protection will be provided using NIOSH/MSHA-approved full-face respirators, with HEPA combination filter cartridges approved for removal of specific organic vapors, particulates, gases, and fumes. The HEPA filter cartridges will be changed at the end of each work day or when breakthrough occurs, whichever comes first. All site personnel will be fit-tested for respirators using irritant smoke. Due to difficulties in achieving a proper seal between face and mask, persons with facial hair that interferes with the mask-to-face seal will not be allowed to work in areas requiring respiratory protection.

For the protection of project and plant personnel, ambient air monitoring will be performed during all intrusive construction activities. Monitoring will be accomplished by the Contractor using real-time monitoring equipment, including a photoionization detector (PID), an explosimeter/oxygen meter, and a dust monitor.

The primary purpose of this air monitoring is to (1) assess the adequacy of respiratory protection, (2) assess the potential hazards in the work area, and (3) assess the potential offsite migration of airborne contaminants.

TABLE 5-1

MINIMUM COMPONENTS OF PERSONAL PROTECTION LEVELS

<u>Level D Protection</u>	<u>Level D-Modified Protection</u>	<u>Level C Protection</u>
o Safety glasses with side shields (or goggles)	o Safety glasses with side shields (or goggles)	o Hard hat
o Hard hat	o Hard hat	o Poly-coated disposable (or standard disposable) coveralls
o Ordinary coveralls	o Face shield (optional)	o Inner gloves of snug-fitting latex or vinyl
o Ordinary work gloves	o Standard disposable coveralls	o Outer gloves of neoprene or nitrile
o Steel-toe, steel-shank work shoes or boots (chemical resistant)	o Inner gloves of snug-fitting latex or vinyl	o Steel-toe, steel-shank work shoes or boots (chemical resistant)
o Outer boots of neoprene or butyl rubber (optional)	o Outer gloves of neoprene or nitrile	o Outer boots of neoprene or butyl rubber
	o Steel-toe, steel shank work shoes or boots (chemical resistant)	o Disposable outer "booties" (optional)
	o Outer boots of neoprene or butyl rubber	o Full-face air-purifying respirator (to be worn)*
	o Full-face air-purifying respirator (immediately available)*	o Taping of gloves and boots to disposable coveralls

* Respirator to be fitted with NIOSH/MSHA-approved high-efficiency filter (HEPA) combination respirator cartridges approved for organic vapors, particulates, gases, and fumes.

TABLE 5-2

MINIMUM LEVELS OF PERSONAL PROTECTION FOR MAJOR ACTIVITIES

Intrusive Activities - Level D - Modified Protection

- Consolidation of Waste Areas
- Removal of Tires and Other Inappropriate Waste
- Site Preparation (grubbing, stump removal, stripping/stockpiling topsoil)
- Any excavation of existing material within or near defined limits of fill (regrading, trenching for pipe installation)

Non-Intrusive Activities - Level D Protection

- Street Cleaning
- Dust Control
- Spreading of Topsoil
- Excavation and Loading of Low Permeable Soil
- Hauling, Placement, and Compaction of Low Permeable Soil
- Hydroseeding/Landscaping
- Access Road Construction
- Construction of Decontamination Pad and Contingency Waste Storage Area
- Mobilization/Demobilization
- Fence Removal and Reconstruction
- Site Clearing (work above surface)

NOTE:

These are the levels of protection at which work will commence during the various activities on the site. Due to onsite conditions, and as directed by the SHSO, it may become necessary to upgrade or permissible to downgrade the level of personal protection.

6.0 AIR MONITORING

Real-time air monitoring is required of the Contractor during all intrusive construction activities. Air monitoring instruments shall be calibrated daily and all calibration and monitoring data shall be recorded in a field notebook and transferred to Air Monitoring Logs (sample). Each day, construction activities will not begin until the instruments are calibrated and background levels are determined and recorded. Air will be monitored for total volatiles (organic vapors) with a photoionization detector (HNU Model PI 101 or equivalent equipped with a standard probe containing a 10.2 eV lamp). Explosive atmosphere/oxygen content will be monitored with an explosimeter (Gastech Model GX-91 or equivalent). Airborne particulates will be monitored with a particulate/aerosol monitor (MIE Model PDM-3 Miniram or equivalent).

Air monitoring action levels and appropriate responses shall be established by the Contractor and followed throughout intrusive construction activities. All air monitoring results and field observations (i.e. wind speed, wind direction, humidity, precipitation, etc.) will be recorded in a field notebook and transferred to Air Monitoring Logs.

6.1 Ambient Air Monitoring Program

Both intrusive and non-intrusive construction activities will be taking place on the site. During intrusive activities, the potential air contaminants of concern are organic vapors and airborne particulates; during non-intrusive activities, the concern is nuisance dust. Therefore, each of the two kinds of activities require different levels of effort for ambient air monitoring.

Specific intrusive construction activities anticipated are as follows:

- Consolidation of Waste Areas
- Removal of Tires and Other Inappropriate Waste
- Site Preparation (grubbing, stump removal, stripping/stockpiling topsoil)
- Any excavation of existing material within or near defined limits of fill (regrading, trenching for pipe installation)

Table 6-1 summarizes the minimum anticipated requirements for air monitoring frequencies as well as action levels and responses for intrusive construction activities

Specific non-intrusive construction activities anticipated are as follows:

- Street Cleaning
- Dust Control
- Spreading of Topsoil
- Excavation and Loading of Low Permeable Soil
- Hauling, Placement, and Compaction of Low Permeable Soil
- Hydroseeding/Landscaping
- Access Road Construction
- Construction of Decontamination Pad and Contingency Waste Storage Area
- Mobilization/Demobilization
- Fence Removal and Reconstruction
- Site Clearing (work above surface)

During non-intrusive construction activities, particulates (nuisance dust) will be monitored at the discretion of the Engineer. The level of air monitoring effort will be based on daily site conditions and site-specific baseline data established from worst case conditions for individual activities. The minimum action level for dust suppression will be when the downwind particulate level is 150 ug/m³ greater than the upwind level, as measured at the work area perimeter, as determined by the Engineer.

6.2 Community Air Monitoring Program

The Contractor is required to develop a Community Air Monitoring Program as part of his Contingency Plan. As a minimum, the Community Air Monitoring Program will be put into effect whenever the organic vapor readings exceed 5 ppm above background at the perimeter of the active work area (Exclusion Zone), as determined by the Engineer.

TABLE 6-1
MINIMUM ANTICIPATED ACTION LEVELS DURING INTRUSIVE CONSTRUCTION ACTIVITIES

ORGANIC VAPORS	RESPONSES
0-1 ppm Above Background, Sustained Reading	<ul style="list-style-type: none"> o Continue intrusive activities. o Level D protection. o Continuous monitoring in work area; record readings every 10 minutes. o Hourly perimeter monitoring.
1-5 ppm Above Background, Sustained Reading	<ul style="list-style-type: none"> o Continue intrusive activities. o Level D-Modified protection. o Continuous monitoring in work area; record readings every 10 minutes. o Hourly perimeter monitoring. o More frequent perimeter monitoring, as directed by the SHSO.
5-25 ppm Above Background, Sustained Reading	<ul style="list-style-type: none"> o Continue intrusive activities cautiously. o Level C protection. o Continuous monitoring in work area; record readings every 10 minutes. o More frequent perimeter monitoring, as directed by the SHSO.
> 25 ppm Above Background, Sustained Reading	<ul style="list-style-type: none"> o Discontinue intrusive activities. o Withdraw from area; shut off all engine ignition sources. o Continuous perimeter monitoring. o Initiate Contingency Plan Air Monitoring Program for organic vapors if perimeter readings exceed 5 ppm above background. o Determination of safe re-entry level to be made by the SHSO. o If readings > 25 ppm persist in the breathing zone of the work area, the level of protection used by onsite personnel will be reassessed.
<p>Note: Because the work is being performed in an area of active industrial facilities, upwind organic vapor levels should be checked, and the measured levels should be considered in implementation of these action levels.</p>	

TABLE 6-1 (Continued)

COMBUSTIBLES	RESPONSES
0-20% LEL	<ul style="list-style-type: none"> o Continue intrusive activities. o Level of protection dependent upon organic vapor readings. o Continuous monitoring in work area; record readings every 10 minutes. o Hourly perimeter monitoring.
> 20% LEL	<ul style="list-style-type: none"> o Discontinue intrusive activities. o Withdraw from area; shut off all engine ignition sources. o Continuous perimeter monitoring for organic vapors, combustibles, and % oxygen. o Initiate Community Air Monitoring Program for organic vapors if perimeter organic vapor readings exceed 5 ppm above background. o Determination of safe re-entry level to be made by the SHSO.
OXYGEN	RESPONSES
19.5% - 23%	<ul style="list-style-type: none"> o Continue intrusive activities. o Level of protection dependent upon organic vapor readings. o Continuous monitoring in work area; record readings every 10 minutes. o Hourly perimeter monitoring.
< 19.5% or > 23%	<ul style="list-style-type: none"> o Discontinue intrusive activities. o Withdraw from area; shut off all engine ignition sources. o Continuous perimeter monitoring for organic vapors, % oxygen, and combustibles. o Initiate Community Air Monitoring Program for organic vapors if perimeter organic vapor readings exceed 5 ppm above background. o Determination of safe re-entry level to be made by the SHSO.

TABLE 6-1 (Continued)

PARTICULATES	RESPONSES
Background - 150 ug/m ³ (Downwind minus Upwind readings)	<ul style="list-style-type: none"> o Continue intrusive activities. o Level of protection dependent upon organic vapor readings. o Continuous monitoring in work area; record readings every 10 minutes. o Hourly perimeter monitoring.
> 150 ug/m ³ (Downwind minus Upwind readings)	<ul style="list-style-type: none"> o Discontinue intrusive activities. o Continuous perimeter monitoring for particulates. o Use water for dust control. o Determination of safe re-entry level to be made by the SHSO.

7.0 DECONTAMINATION PROCEDURES

7.1 Decontamination of Personnel

Decontamination of personnel will be performed in the Contamination Reduction Zone. This will be accomplished routinely by washing and rinsing the hands or outer gloves and outer boots with equipment that will be made available such as wash tubs, long-handled brushes, soap and water, and several large garbage cans with vinyl liners. If personnel are in Level C protection, the above procedure will be followed and the respirator will be removed, sanitized, and placed in a plastic bag.

7.2 Decontamination of Equipment

Decontamination of light equipment (such as tools, containers, monitoring instruments, radios, clipboards, etc.) will be accomplished by wiping equipment off with clean damp cloths. The cloths will be discarded with the disposable clothing.

Decontamination of site vehicles and heavy equipment will be carried out by a high-pressure water wash on the decontamination pad in the Contamination Reduction Zone. The function of the decontamination pad is to collect the wash water for storage and proper disposal.

7.3 Decontamination Water Disposal

Water generated from decontamination operations will be collected for appropriate disposal.

8.0 EMERGENCY PROCEDURES

The most likely incidents for which emergency measures might be required are:

- o a heavy equipment-related accident, or other accident resulting in personal injury
- o worker illness
- o a sudden release of hazardous gases/vapors
- o an explosion or fire
- o slipping, tripping, or falling resulting in personal injury
- o spill, release, or discharge of regulated liquid or solid

Minimum emergency procedures to respond to these incidents are covered under the sections that follow. If appropriate, the Contractor's Contingency Plan must also be implemented.

8.1 Communications

A hardline telephone will be maintained in the office trailer during the entire project. Two way radios will be utilized for onsite communication.

8.2 Escape Routes

Flags will be used to indicate wind direction. In the event of a sudden release of gases, or a fire, all personnel will be required to move upwind or at 90 degrees away from the location of the release or fire. This may require personnel to move from the Exclusion Zone directly into an offsite area without proper decontamination. At the conclusion of the emergency, they should move to the Contamination Reduction Zone for proper decontamination.

8.3 Evacuation Signal

In the event of a sudden release or fire requiring immediate evacuation of the site, three quick blasts will be sounded on an air horn. The horns will be kept in conspicuous places for

quick access by personnel. Dunlop Tire Corporation will be immediately notified by telephone, and later by written report whenever a site evacuation is executed. Dunlop will, in turn, notify NYSDEC and decide whether or not to evacuate any or all of its personnel.

8.4 Other Signals

Emergency hand signals for use by personnel wearing air-purifying respirators are summarized in Table 8-1.

8.5 Fire/Explosion

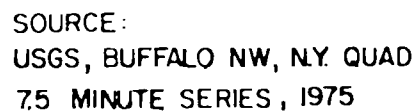
At the start of intrusive work, the Town of Tonawanda Fire Department will be notified and briefed about the potential hazards at the site. Fire extinguishers will be used to put out small fires, if any. In the event of a fire that cannot be controlled with available equipment, the local fire department will be summoned immediately, through Dunlop security, by the SHSO, who shall apprise them of the situation upon their arrival. Dunlop will in turn, notify NYSDEC. (See Table 8-2 for telephone numbers of emergency response agencies).

8.6 First Aid

At the startup of construction activities, the SHSO will contact hospital personnel regarding the potential hazards at the site.

First aid for personal injuries will be administered in the Support Zone by the SHSO. If a site worker should require further treatment, he will be transported to the hospital in a vehicle maintained on site for this purpose or an ambulance summoned by the Contractor. The onsite vehicle will carry written directions to the hospital as well as a copy of Figure 8-1 showing the route.

All accidents, however insignificant, will be reported to the SHSO.



**DUNLOP TIRE CORPORATION
ROUTE TO HOSPITAL**

FIGURE 8-1

TABLE 8-1
EMERGENCY HAND SIGNALS

- | | | |
|---|-----------------------------------------------------------|-----------------------------------------|
| o | Hand gripping throat | - Can't breathe. |
| o | Grip partner's wrist, or
place both hands around wrist | - Leave area immediately, no
debate! |
| o | Hands on top of head | - Need assistance. |
| o | Thumbs up | - I am all right, OK, I understand. |
| o | Thumbs down | - No, negative. |

TABLE 8-2
EMERGENCY CONTACTS

Emergency Response Agencies

Town of Tonawanda Fire Department	876-1212
Town of Tonawanda Police Department	876-5300
Erie County Sheriff	662-5554
New York State Police	759-6831
Erie County Emergency Services	858-6578

Medical Facilities/Ambulance

Kenmore Mercy Hospital	General - 879-6100
2950 Elmwood Avenue	Emergency - 879-6121
Kenmore, New York 14217	
Twin City Ambulance	692-2100
Tonawanda Paramedics	876-5300

Environmental and Health Agencies

NYSDEC (Glenn May)	851-7220
NYSDOH	847-4500
Erie County Health Department	858-7690

USEPA National Response Center	1-800-424-8802
(Chemical spills, oil spills, pollutant discharges)	

Utilities

National Fuel (gas)	Emergencies - 874-2500
Niagara Mohawk (electric)	Emergencies - 862-4400
New York Telephone (Buried Cable Notification Center)	893-1133

TABLE 8-2 (Continued)

URS Consultants, Inc.

Robert Murphy	856-5636
Richard Fudeman	856-5636

Dunlop Tire Corp.

Dan Pyanowski - Central Environmental Engineer	879-8274
Mark Sieverding - Plant Engineering Manager	879-8275
Brian Kelly - Plant Safety	879-8546
Security - Guard House	879-8271

All personnel designated to administer first aid will have received a minimum of eight hours training in first aid and CPR, and be certified by the American Red Cross.

In the event of an emergency rescue situation, the appropriate rescue equipment will be immediately available. The rescue equipment are items such as self contained breathing apparatus, safety harness and lines, and a stretcher.

In the event of a serious personal injury requiring offsite medical attention, the injured person will first be moved to the Contamination Reduction Zone, where an attempt will be made to go through the decontamination procedures, including removal of protective clothing.

If a head, neck, back, or spinal injury is suspected, or the person is unconscious for any reason, the injured person will not be moved. An ambulance will be summoned to the site and the Dunlop Guard House will be notified. The Contractor's personnel will direct the ambulance to the injured person.

8.7 Emergency Assistance

The name, telephone numbers, and locations of police, fire, hospital, and other agencies whose services might be required, or from whom information might be needed, will be kept in the Contractor's and Engineer's office trailers. The current list is presented Table 8-2. The Contractor will need to expand this list to include his personnel.

8.8 Spills

The potential for spills and other inadvertent releases or discharges to occur during onsite work at the Dunlop Tire Corporation Inactive Waste Disposal Sites is minimal, since the direct handling of hazardous waste containers (drums, tanks, etc.) is not anticipated to be part of the scope of work except, possibly, as a contingency item. However, fuels, oils, and lubricants as well as potentially contaminated soil, and possibly water, will be handled. In the event that any materials are spilled during onsite transport, the following minimum procedures will be implemented:

8.8.1 Liquid Spills - If a liquid is spilled on a permeable surface, two inches of surficial material will be removed where the spill occurred and drummed. The area will later be either backfilled with clean material or regraded. If liquid is spilled on an impermeable surface, a sorbent material will be applied to the spill area. The sorbent material will be swept up and drummed, and the spill area washed down with clean water.

8.8.2 Soil Spills - Soil spilled on a permeable surface will be shovelled up. If soil is spilled on an impermeable surface, the material will be shovelled (or swept) up and the area washed with clean water.

8.9 Reports

Any emergencies, spills, or releases that occur on the site will be reported to URS and Dunlop within one hour and will be followed by written notification within 24 hours. Dunlop will, if necessary, notify NYSDEC of the emergency situation.

8.10 Accident Investigation and Reporting

8.10.1 Accident Investigations

All accidents requiring first aid which occur incidental to activities onsite will be investigated. The investigation format will be as follows:

- o interviews with witnesses,
- o pictures, if applicable, and
- o necessary actions to alleviate the problem.

8.10.2 Accident Reports

In the event that an accident or some other incident such as an explosion or over-exposure to potentially hazardous chemicals occurs during the course of the Project, the Engineer and Dunlop will be telephoned within one hour and receive a written notification within 24 hours.

Dunlop will, in turn, notify NYSDEC of the incident. The report shall include the following items:

- o Name, telephone number, and location of the Contractor.
- o Name and title of person(s) reporting.
- o Date and time of accident/incident.
- o Location of accident/incident, ie., building number, work area, facility name.
- o Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident.
- o Cause of accident/incident.
- o Casualties (fatalities, disabling injuries).
- o Details of any existing chemical hazard or contamination.
- o Estimated property damage, if applicable.
- o Nature of damage; effect on contract schedule.
- o Action taken by Contractor to insure safety and security.
- o Other damage or injuries sustained (public or private).

9.0 TRAINING REQUIREMENTS

All personnel conducting intrusive construction activities on site are required to be certified in health and safety practices for hazardous waste operations as specified in the Federal OSHA Regulations (29 CFR 1910.120) (revised March 6, 1990). Paragraph (e) (2) of the above-referenced regulations requires that each employee, at the time of job assignment, receive a minimum of 40 hours of initial instruction off the site, and a minimum of three days of supervised field experience.

Paragraph (e) (3) of the above referenced regulations requires that all onsite management and supervisory personnel directly responsible for, or who supervise employees engaged in hazardous waste operations, must initially receive eight hours of additional specialized training. Management and supervisory training must include health and safety practices related to managing hazardous waste work.

Paragraph (e)(8) of the above referenced regulations requires that workers and supervisors must receive eight hours of refresher training annually on the items specified in Paragraph (e)(1) and/or (e)(3).

Additionally, all personnel must receive adequate site-specific training, in the form of an Onsite Health and Safety Briefing given by the Health and Safety Manager prior to participating in onsite field work, which will involve a review of the Site Health and Safety Plan prepared by the Contractor with emphasis on the following:

- o Protection of the adjacent community from vapors and particulates which may be released during remedial construction activities,
- o Attention to health effects and hazards of substances known to be present on site,
- o Hazards of and protection against heat/cold,

- o The need for vigilance in personal protection, and the importance of attention to proper use, fit, and care of personal protective equipment,
- o The effectiveness and limitations of personal protective equipment,
- o Prescribed decontamination procedures,
- o Site control, including work zones, access, and security,
- o The proper observance of daily health and safety practices, such as the entry and exit of work zones and site, proper hygiene during lunch, break, etc.,
- o Recognition in oneself or in others of physical conditions requiring immediate medical attention, and application of simple first aid measures, and
- o Emergency procedures to be followed (with rehearsals) in cases of fire, explosion, or sudden release of gases.

Dunlop will be notified when such site-specific training sessions are to be conducted.

Health and Safety Meetings will be conducted daily by the SHSO and will cover protective clothing and other equipment to be used that day, potential chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

10.0 MEDICAL SURVEILLANCE REQUIREMENTS

At a minimum, Project personnel involved in intrusive construction activities on the site will be required to undergo a medical examination prior to, and at the completion of, participation in this project, or be involved in an existing annual medical surveillance program. This examination must take place not more than one year prior to and one year after the completion of site work and must be conducted by a physician who is board-certified in occupational medicine. The physician will have been made familiar with the job-related duties of each worker examined.

URS personnel are examined at HEALTHWORKS, 300 Two Mile Creek Road, Tonawanda, New York 14150. Components of URS's medical surveillance program are shown in Table 10-1. The Contractor's Health and Safety Plan must provide the name of the examining facility and the components of its medical surveillance program.

The examining physician must certify that the individual is fit to conduct work on this project using the required personal protection, or whether he or she must work within certain restrictions. Personnel may be excluded from this site for medical reasons.

Persons exposed to high levels of hazardous substances may be required to undergo a repeat medical exam at or before the conclusion of the project to determine possible health impacts. Persons suffering a lost-time injury or illness must have medical approval prior to returning to work on site.

All medical records will be held by the employer in accordance with OSHA regulations on confidentiality and any other applicable regulations and will be made available to OSHA upon request.

TABLE 10-1

COMPONENTS OF URS MEDICAL SURVEILLANCE PROGRAM

- o Medical and occupational history
- o Physical examination, with particular attention to the cardiopulmonary system, general physical fitness, skin, blood-forming, hepatic, renal, and nervous systems
- o Urinalysis, to include:
 - color
 - appearance
 - specific gravity
 - pH
 - ketones
 - protein
 - glucose
 - blood
 - bilirubin
 - leukocyte esterase
 - nitrite
 - WBC
 - RBC
 - casts
 - bacteria
 - epithelial cells
 - crystals
 - yeasts
- o Blood analysis, to include:
 - complete blood count
 - hemoglobin
 - albumin, globulin, total protein
 - bilirubin - direct and total
 - g-glutamyl transpeptidase
 - serum glutamic oxalacetic transaminase
 - lactic dehydrogenase
 - alkaline phosphatase
 - sodium
 - potassium
 - chloride
 - magnesium
 - calcium
 - phosphorus
 - uric acid
 - BUN (blood urea nitrogen)

TABLE 10-1 (Continued)

- creatinine
 - cholesterol
 - triglycerides
 - glucose
 - iron
 - heavy metals - arsenic, lead, mercury, and zinc protoporphyrin
- o Pulmonary function test
 - o Additional tests as appropriate, including:
 - chest X-ray
 - electrocardiogram
 - stress test

11.0 .CONFINED SPACE SAFETY REQUIREMENTS

It may be necessary to enter confined spaces for certain construction activities. The Contractor's Health and Safety Plan must include a section on confined space safety requirements. An example of these requirements is provided in Attachment C of this document.

ATTACHMENTS

ATTACHMENT A

DUNLOP SAFETY GUIDELINES FOR CONTRACTORS

DUNLOP TIRE CORPORATION
BUFFALO PLANT

SAFETY GUIDELINES FOR CONTRACTORS

1.0 INTRODUCTION

1.1 Purpose

This document has been prepared to acquaint contractors and their employees with some of their responsibilities and obligations regarding safety and security matters while on Dunlop Tire property. It will be the responsibility for contractors to read, understand, disseminate and abide by these standards.

1.2 Scope

Contractors, their employees, and subcontractors are required and encouraged during the performance of their contracts to comply with these safety standards.

In the event a contractor or it's employees believe they are being put at risk due to an unsafe event or condition beyond their control, they should immediately contact their supervisor, Dunlop Tire Representative or the Safety Engineer. If the Situation is not corrected to the satisfaction of the contractor, the contract employee should notify his representative and leave the affected area.

1.3 Limitations

Nothing contained in these guidelines is to be construed as relieving or absolving the contractor, subcontractor, or their employees from the duties and obligations imposed on them by law, including the Occupational Safety and Health Act or any relevant regulation.

The standards set forth in these guidelines are not inclusive, but will provide a basis for understanding their responsibilities and cover most tasks that contractors are normally assigned.

OSHA STANDARD 1910 Standard for General Industry, OSHA Standard 1926 Standard for Construction Industry, National Fire Codes, National Electrical Code, American National Standards Institute, et al, should be referenced for safety standards applicable to the contractor's project.

2.0 GENERAL RESPONSIBILITIES

- 2.1 Contractors are responsible for first-aid and transporting of employees to hospital emergency rooms or health providers.

The Dunlop Tire Medical Department will respond to emergency situations if needed or requested. Contractors should inform the Dunlop Tire Medical Department in advance which hospital or medical provider they wish their employees referred to.

- 2.2 Possession, use, or sale of any intoxicant, narcotic, barbiturate, mood altering, tranquilizing or hallucinogenic drug on Dunlop's premises is strictly forbidden, or, shall any contractor or subcontractor employee be under the influence of substances that could render that person unsafe for work.
- 2.3 Contractors are responsible to provide to their employees the necessary personal protective equipment necessary by tasks or applicable standard, i.e., hard hats, eye protections, welding hoods gloves, etc. Athletic shoes i.e., "sneakers" are not acceptable footwear. Shoes must be acceptable protective shoes of sturdy construction.
- 2.4 Contractors are responsible for supplying fire extinguishers, welding curtains, or other necessary safety equipment.
- 2.5 All motorized equipment brought on site shall be in good working condition to include hydraulics, exhaust, brakes, lights, horns, etc. Any deficiency such as oil or hydraulic leaks shall be repaired as quickly as possible, and/or removed from service.
- 2.6 Propane and/or electrical powered equipment is preferred for use within the plant interior. In the event diesel or gasoline powered equipment has to be used, prior approval must be obtained and a "Hot Work Permit" form issued by Dunlop for project assigned. Permits not to exceed one week in duration.
- 2.7 At no time will fire arms, ammunition, or any type of explosives, to include powder actuated tools be allowed on the premises without the expressed consent of the Dunlop Plant or Safety Engineer.
- 2.8 Fire protection systems, automatic sprinklers, yard hydrants, post indicator valves, fire pumps, fire hose, extinguishers, CO2 systems, shall not be blocked or impaired at any time.
- 2.9 Areas of work shall be kept free from debris and foodstuffs. Containers used for refuse will be emptied to prevent overflow. Scrap, excess, and packaging materials shall be removed from site daily.
- 2.10 All access roads will be kept open to allow for entrance of emergency vehicles.

- 2.11 Smoking is not permitted except in designated areas, break areas, and restrooms.
- 2.12 Horseplay is not permitted.
- 2.13 Fighting on Dunlop Tire property is strictly forbidden.
- 2.14 Running on plant property is not allowed except in cases of emergency.

3.0 SPECIFIC RESPONSIBILITIES

- 3.1 Dunlop Tire has in place a written Hazard Communication Program. Prior to any work being performed in an area where hazardous materials are stored or used, contractors and their employees must be made aware of the hazards involved, their location, and where Material Safety Data Sheets can be obtained. Contractors are responsible for specific training per OSHA Standard 1910.1200.
- 3.2 No materials that could be considered hazardous shall be introduced into the plant or used without prior approval of Dunlop Tire. Approved hazardous materials must be preceded by delivery to Dunlop of Materials Safety Data Sheets and prior to arrival on site materials shall be properly labeled per OSHA Standard 1910.1200.
- 3.3 Fire protection systems shall not be altered or shut-off without the approval of the Safety Engineer or appointed designee. If a system must be altered or shut-off, Dunlop Tire has to implement Industrial Risk Insurer's impairment procedure.
- 3.4 Contractors shall insure all cranes, lifts, backhoes, hoists, etc. have been inspected and found to be in good working condition prior to use in the plant. This is to include all chains, chokers, wire rope, brakes, booms, slings, have been inspected or load tested as required by pertinent OSHA regulations.
- 3.5 Welding, burning, brazing, or cutting shall be done in accordance with OSHA Standard 1910.252. Prior to any "hot work" being performed a burning permit will be obtained from the DTC Representative or DTC Engineer and all requirements of the burn permit accomplished. Permits will be issued on a daily basis and turned in to the guard house at the end of the work day. This procedure shall include the proper storage, segregation, and use of fuel gas cylinders, and oxygen cylinders.
 - 3.5.1 In the event that passers-by could be affected by arcing, hot slag, or sparks, welding curtains or non-flammable barriers shall be used. At no time will welding or cutting be performed without the use of welding curtains if the possibility of eye damage could occur. Any overhead welding or cutting requires that area below be roped off and/or a fire watch be posted.

- 3.6 Confined space work, i.e., tanks, pits, manholes, sewers, will not occur without the approval of the Dunlop Safety Engineer or his designee. Atmospheres within the confined spaces shall be tested for flammable, toxic vapors, and oxygen levels prior to entry. A safety watch shall be posted at the entrance of confined spaces to monitor all workers within the confined area, and respiratory rescue equipment shall be stationed in the area and persons trained in the use rescue equipment and safety ropes and harnesses will be stationed nearby where necessary.
- 3.7 Tow.motor operations shall be conducted in strict accordance with OSHA Standard 1910.178. Contractors are responsible for training and licensing of their operators. Contractors shall insure equipment is operated at safe speeds, lift personnel in approved and properly attached manlifts, and operate within the capacity of the equipment.
- 3.8 At any time trenching is done, OSHA Standard 1926.66 shall be followed. This will include the shoring of trenching if below five feet ground level and if the angle of repose cannot be established safely.
- 3.9 When any work performed on equipment or systems that could expose an employee or others to hazards such as moving parts, electrical shock, or the release of hazardous materials, a lock and tag-out procedure shall be used. Zero machine state should be attained prior to any work on equipment that could create hazards.
- 3.9.1 Temporary wiring to Dunlop power sources must be approved by the Dunlop Engineer, or person in charge of the project. All temporary wiring must be in accordance with National Electric Code Standards.
- 3.9.2 Ground Fault Interrupters must be used on all hook ups for power tools, lighting, extension cords, etc.
- 3.9.3 At any time persons must climb above ten feet and the use of manlifts is impossible, safety belts shall be issued and used to include tie-off to existing substantial structures to preclude injuries from a fall.
- 3.9.4 If any combustible or flammable liquid must be dispensed, only NFPA or UL approved safety cans shall be used. All drums of flammable or combustible liquid shall be properly bonded and grounded and safety spouts used. Gas welders, fork trucks etc. will be moved outside at least twenty feet for fueling.
- 3.9.5 Hazardous materials or hazardous waste will only be disposed of by approved methods and shall be

coordinated through Dunlop Tire Environmental Engineering.

3.9.6 During periods when either overhead work is being performed or holes, pits, or trenching are opened, appropriate barriers and signs shall be erected by the contractor to warn of such dangers and only authorized personnel allowed into the area.

3.9.7 In areas which are in or close to production personnel, the production supervisor of the area should be notified as to type of work that shall be performed.

4.0 GENERAL WORK RULES

4.1 Satisfactory Contractor insurance certificates must be on file with the Dunlop Tire purchasing department prior to entry to the plant.

4.2 Violation of Plant Security procedures shall not be tolerated.

4.3 Theft of Dunlop Tire or property of others will be grounds for discharge and possible criminal prosecution.

4.4 Willful, careless, or repeated destruction of property, materials, and equipment will not be tolerated.

4.5 Contractors shall employ only qualified personnel for all phases of the project work.

4.6 Contractors shall be responsible for the actions of all subcontractors, their personnel, and shall take all necessary actions to insure that all plant rules and regulations are followed.

4.7 Contractors shall have on site a qualified supervisor at all times when personnel are on site or work being performed.

4.8 Each contractor shall appoint a representative for coordination of all project activities and for plant directions and discussions.

4.9 Construction and demolition materials shall be transported off-site for proper disposal in a land fill approved for construction and demolition materials - NO DUMPING ON-SITE.

5.0 SECURITY GUIDELINES

5.1 Contractors shall use the appropriate contractor gate during posted hours. Saturday, Sunday, holidays or off hours contractors will contact Dunlop Security for entry and exit from contraction gate.

- 5.2 Contractors shall inform their employees that all vehicles and packages entering or exiting any gate are subject to search.
- 5.3 Contractors and their employees will be issued a numbered badge so as to identify their employees as the firm by which they are employed. These badges are issued at the contractors gate. These badges must be worn at all times while on Dunlop property.
- 5.4 Contractors shall park in the appropriate contractor's parking lot. Temporary admittance shall be permitted for loading or unloading of vehicles but vehicles must return to the designated area in the parking lot. Unrestricted access will only be allowed by the Plant Engineer, Engineering Manager, or Maintenance Manager. Abuse of vehicle privilege will result in total loss of vehicle access. Unrestricted vehicles shall have their company logo affixed for identification.
- 5.5 Contractors shall make every effort to mark tools, equipment and other property in such a way as to be easily identifiable as to owner. Marking should be done in such a manner as to not easily be erased. Methods to secure tools and equipment should be used such as gang boxes, temporary tool sheds, etc., when not in use.
- 5.6 Contractors shall supply the head of security with a list of names of all personnel allowed on site, and in the event of dismissal that an employee has been restricted from the site.
- 5.7 Contractors shall not be allowed in areas other than where their work is being performed.
- 5.8 At no time shall penetrations of the security fence be permitted without the expressed approval of the Plant Engineering Manager. Perimeter lighting will only be taken out of service with approval of the Plant Engineering Manager.

DUNLOP TIRE CORPORATION
BUFFALO PLANT
SAFETY GUIDELINES FOR CONTRACTORS

I, We the undersigned , representing _____

have read, understand and will adhere to the safety, work and security rules (Safety Guidelines for Contractors) as published by Dunlop Tire Corporation, Buffalo Plant. I, We fully recognize that the adherence to the guidelines published by Dunlop Tire, does not diminish our legal and financial obligations in the event of injury or death to a person employed by _____

or it's subcontractors, nor increase the liability of Dunlop Tire Corporation, Buffalo Plant, its employees, agents, officials, or representatives.

(Representative's Signature)

(Representative's Signature)

(Date)

ATTACHMENT B

STANDARD OPERATING SAFETY PROCEDURES

ATTACHMENT B - STANDARD OPERATING SAFETY PROCEDURES

Rules for onsite personal safety are shown in Table B-1; rules for operational safety appear in Table B-2.

TABLE B-1
PERSONAL SAFETY RULES

- o Visual contact must be maintained between crew teams on site.
- o Any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in any area designated as contaminated. These practices include as a minimum, eating, drinking, chewing gum or tobacco, and smoking.
- o Hands and face must be thoroughly washed upon leaving the work area, and before engaging in any other activities, especially eating or drinking.
- o Due to interference of facial hair with the mask-to-face seal on air-purifying respirators, personnel working on site will not be permitted to wear facial hair that interferes with the seal.
- o Contact with contaminated surfaces or surfaces suspected of contamination should be avoided. Site personnel should avoid walking through puddles, mud, or other discolored areas, and should not kneel or sit on the ground.
- o Construction personnel shall be familiar with the physical characteristics of the site, including:
 - wind direction in relation to the working area
 - accessibility to associates, equipment, and vehicles
 - communications
 - work zones
 - site access
- o Medicine and alcohol can exacerbate the effect from exposure to toxic chemicals. Prescribed drugs should not be taken by construction personnel where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage and controlled substance intake is strictly forbidden during onsite operations.

TABLE B-2
OPERATIONAL SAFETY RULES

- o No visitors, except OSHA and NYSDEC representatives shall be allowed on site without written permission from Dunlop Tire Corporation.
- o Onsite personnel must use the buddy system when wearing respiratory protective equipment.
- o During day-to-day operations, on site workers will act as a safety backup to each other. Offsite personnel will provide emergency assistance.
- o Wind directions will be set up so as to be visible from the Exclusion Zone.
- o Heavy equipment will be kept clean and free of accumulated greases, oils, and other combustible materials.
- o No containers of fuels or other flammables will be kept within 100 feet of any operating heavy equipment.
- o Daily briefings will be held to review site hazards, changes in level of personal protection required, special safety precautions for assigned work activities, and emergency response.
- o All personnel going on site must be thoroughly briefed on anticipated hazards, and trained on equipment to be worn, safety procedures, emergency procedures, and communications.

ATTACHMENT C
CONFINED SPACE SAFETY REQUIREMENTS

12.0 CONFINED SPACE SAFETY REQUIREMENTS

12.1 INTRODUCTION

A confined space is any space or enclosure that (1) has limited openings for entry and exit, (2) may have limited ventilation, (3) may contain or produce life threatening atmospheres due to oxygen deficiency or the presence of toxic, flammable, and/or corrosive contaminants, or (4) is not intended for continuous employee occupancy. Examples may include, but are not be limited to, storage tanks, process/reaction vessels, stacks, pits, basements, silos, vats, degreasers, boilers, ventilation and exhaust dusts, manholes, sewers, tunnels underground utility vaults, pipelines, and any open top space 4 feet or more in depth that is not subject to adequate ventilation.

The configuration of the space and the proposed operation to be conducted within that space ultimately determined if a confined space condition exists.

12.2 ENTRY DECISION

Entry into a confined space should only be undertaken where there is no alternative means of obtaining the necessary results or accomplishing the required operation. Thus, confined space entries are a last resort.

12.3 ENTRY PERMIT SYSTEM

Entry into a confined space enclosure is by permit only. The permit process, as specified in 29 CFR Part 1910.146 (FR/Vol. 58, No. 9, January 14, 1993), is designed to protect employees from hazards associated with work within a confined space. The permit, as shown in Appendix 12-A, serves as written approval and authorization by the SHSC for an entry of a specific space for a specific task. The permit certifies that existing and potential hazards have been evaluated by the SHSC and identifies the protective measures required to ensure worker safety. The entry permit, when completed, serves as a final safety briefing outline before entry and must be reviewed by the SHSC with the entry team and standby personnel.

The entry permit identifies:

- The location of the confined space and a description of the entry task
- Known and potential hazards that may be encountered in the confined space
- Isolation checklist:
 - Blanking and/or disconnecting of all lines
 - Electrical lockout and tagout (both)
 - Mechanical isolation and tagout (both)
 - Mechanical ventilation (volumes)
- Safety and protective equipment:
 - Type of PPE consistent with the level of protection required
 - Safety harness and/or lifelines
 - Extraction devices
 - Tools and electrical equipment approvals (including lighting and communications devices)
- Pre-entry atmospheric monitoring:
 - Oxygen level
 - Combustible gas/vapor level
 - Toxic substances level

- Provisions for continuous atmospheric monitoring:
 - Equipment
 - Evacuation criteria
- Identification of entry team:
 - Personnel to make entry
 - Personnel on stand-by
- Emergency procedures and first aid equipment location
- Site-specific training required:
 - Confined space entry
 - Confined space rescue
 - Respirator use

12.4 CONFINED SPACE TRAINING

Personnel required to work inside or in support of those working inside a confined space must have site-specific training in the following areas:

- Hazards associated with confined space operations
- Emergency entry and exit procedures
- Respiratory protection
- Lockout/tagout procedures
- Safety equipment
- Rescue operations

- Permit system
- Safe work practices for confined space operations

Documentation of the training will be forwarded to the OSC and kept in the office safety file. The training course must be approved by the regional HSM prior to enrollment.

12.5 AIR MONITORING

Absolutely no entry is allowed until appropriate initial testing has been conducted to determine the atmosphere in the confined space. The area must be monitored for oxygen content, combustible gases/vapors, toxic contaminants, and any other tests specified by the SHSC. In addition, the area should be monitored continuously conducted while personnel are in the enclosure.

Personnel may enter a confined space only under the following conditions:

- Oxygen concentrations are between 19.5 and 23.5 percent
- Toxicity measurements indicate concentrations of airborne contaminants at levels less than one-half of the OSHA mandated PELs
- Combustible gas/vapor concentrations are less than 10 percent of the lower explosive limit (LEL)

Initial atmospheric samples must be drawn at the following locations:

- Outside the entry point(s)
- Immediately inside the entry point(s)
- At least every 4 feet in depth of the confined space to the surface of the floor or any remaining residues

All initial monitoring results must be recorded on the entry permit.

12.6 PROTECTIVE EQUIPMENT AND CLOTHING

The entry permit must specify the level of protection necessary. At a minimum, a hard hat, steel-toed boots and coveralls are required. In addition, employees may be required to wear safety equipment such as eye protection, hearing protection, gloves, safety belts, body harness, or wrist-type harnesses with life lines.

Life lines should be attached to extraction devices outside the space. On rare occasions, respiratory protection such as a self-contained breathing apparatus (SCBA) may be necessary. Prior approval by the regional HSM is required for these situations.

Standby personnel must be equipped with at least the same level of protection as the entry team.

12.7 WORK PRACTICES

As part of the preentry procedure, the SHSC or designee must review the entry permit with all members of the entry team and standby personnel present during the operation. The SHSC should maintain communication and have ready access to emergency and support services and facilities.

12.7.1 Purging and Ventilation

All enclosures must be purged and have continuous ventilation after initial atmospheric testing and prior to any actual entry. The effectiveness of ventilation depends on the number of air changes and the efficiency of mixing the air with the gas in the tank. Ventilation by supply air provides more efficient mixing than exhaust air, but cannot be used if it creates a hazard near the discharge point. Exhaust air ducts must be placed at locations remote from the air inlets.

Prior to entry, the air should be changed a minimum of five times where oxygen deficiency may exist and 10 changes are recommended where a toxic and/or flammable material is involved.

Concentrations of vapors or gases in or above the flammable range may require replacement by an inerting gas such as nitrogen or carbon dioxide to prevent explosions. When inert gases are used, they must be replaced by air prior to entry unless the inert agent provides safer working conditions.

All fans and other equipment used for removing flammable gases or vapors must conform to NFPA requirements and must not create an ignition hazard.

Pure oxygen must never be used for ventilation.

12.7.2 Isolation/Lockout and Tagging

Whenever feasible, all confined space should be completely isolated from other systems. Possible isolation methods include double-block-and-bleed and blanking or physical disconnection of all lines. Double-block-and-bleed consists of the closure of a line, duct, or pipe by locking and tagging a drain or vent that is open to the atmosphere in the line between two locked/closed valves. Blanking or blinding, consists of the absolute closure of a line, duct, or pipe by fastening across its bore a solid plate or cap which completely covers the bore. All lines that have been subject to isolation actions must be tagged to identify the reason. The tag must contain the following statement:

DANGER
THIS EQUIPMENT HAS BEEN
REMOVED FROM SERVICE DUE
TO CONFINED SPACE WORK

AT _____

DO NOT OPERATE

Date _____

Name _____

The confined space must be electrically isolated to prevent accidental activation of moving parts in the space or other electrical equipment. Electrical isolation should be accomplished by lockout of circuit breakers and/or power disconnects in the open (OFF) position by key-type padlock. Each work crew entering the space should have placed a lock on the circuit breaker/disconnect and should maintain possession of the key to the lock. Any circuit breaker/disconnect that is locked out should also be tagged to identify the reason for the lock out. This procedure also applies to pneumatic systems after the pressure has been released.

Moving parts should be isolated by disconnecting linkages or removing the chain or belt drives. Other moving parts should be blocked to preclude accidental rotation. All parts that have been blocked should have tags.

12.7.3 Cleaning

If possible, the space should initially be cleaned from the outside. If initial testing shows a flammable atmosphere at or above the LEL, the enclosure should be purged with an inert gas prior to ventilation.

The cleaning process itself may create the following potentially hazardous conditions:

- Excessive heat stress in the confined space if it is steamed cleaned and not allowed to cool down
- Buildup of toxic materials if a chemical neutralizer is used and ventilation is not inadequate, or through increased volatilization caused by the cleaning process
- Potential for fire and explosion where the automatic ignition temperature of the stored product in the confined space is 120 percent or less of the steam outlet temperature

12.7.4 Entry Into Confined Space

After initial cleaning, atmosphere evaluation, purging, and isolation of the powered systems, employees may enter the confined space provided that they comply with the following steps:

- Respiratory protective equipment must be used when indicated.
- An observer capable of maintaining communication at all times must be located outside the confined space. He or she must have respiratory protection available when indicated.
- If the possibility of a highly toxic or flammable atmosphere or oxygen deficiency exists (or may develop) workers must wear safety harness with a life line attached. In addition, a means of rescue must be provided.

- If the possibility of a fire exists, fire extinguishing equipment must be immediately available.
- Ventilation must be maintained at all times when workers are in confined spaces—except when the atmosphere has been purposely inerted to provide safer working conditions. All work must stop and the area must be evacuated if ventilation fails.
- All tools and equipment must be available as required.
- Emergency lighting must be available as required.

12.7.5 Hot Work

Hot work—involving sources of ignition such as welding and burning—requires assurance that fire hazards and flammable atmospheres have been controlled. Measures must be taken to remove or isolate combustible materials.

The following precautions must be taken when doing hot work:

- The atmosphere must be tested with a combustible gas indicator and/or a similar sampling device. Tests should be made frequently enough to assure that safe conditions prevail.
- Hot work permits are required prior to entry into a confined space.
- Where hot work involves the generation of toxic gases, vapors, or fumes, local exhaust and/or respiratory protection is required.
- Compressed gas cylinders should not generally be allowed in confined spaces. Compressed gas lines must be protected from rupture or damage. Compressed gas cylinders or electric generators should be attended at all times. Sources of compressed gases or arc-welding power must be turned off immediately when an emergency arises or when work is interrupted or completed.

12.7.6 Equipment, Instruments, and Tools

All tools and other equipment used, including monitoring instruments, must be inspected for compliance with the following requirements:

- All tools and other equipment must be operable, clean, and in a good state of repair.
- All electrical equipment, including portable tools, lighting, and power cords, must comply with OSHA regulations (29 CFR Section 1910.307) including provisions for ground fault interruption protection and visual inspection of equipment for defects or damage.
- Lighting must be explosion-proof, equipped with necessary guards, and bear UL or other appropriate approval listings.
- Air-activated tools must be used where flammable liquids are present and must be grounded to the confined space.
- Compressed gas cylinders, except those that are part of SCBA or resuscitation equipment, are not permitted.
- Ladders, scaffolding, and staging must be designed and fabricated to meet OSHA regulations (29 CFR 1910 Subpart D).
- Any equipment or instrumentation subject to use where flammable atmospheres may occur must be listed as explosion-proof or intrinsically safe by a recognized testing laboratory.

12.8 RECORD KEEPING

Copies of the entry permit must be maintained in the project file as required in 29 CFR 1910.146.

Appendix 12-A
Work Permit for Confined Space Operations

Work Permit for Confined Space Operations

All copies of this permit must remain at the job site until site operations are completed.

EXPIRATION DATE: _____

Location of confined space: _____

Description of task: _____

Hazards (i.e., limited access, toxic contaminants, flammable contaminants, oxygen deficiency, restricted ventilation, etc.) _____

Level of protection (A, B, C, or D): _____

Personnel assigned:

Name: _____	Duties: _____	Training completed: _____
Name: _____	Duties: _____	Training completed: _____
Name: _____	Duties: _____	Training completed: _____
Name: _____	Duties: _____	Training completed: _____
Name: _____	Duties: _____	Training completed: _____

Special equipment required: _____

First aid equipment location: _____

Safety requirements/procedures: _____

Emergency procedures: _____

Approved by: _____

Site Health & Safety Coordinator

PREPLAN EACH JOB

This confined space entry permit, when properly authorized, allows the person to whom it is issued to enter the area specified. Work must not be started until the indicated signatures have been obtained, all requirements met, and any discrepancies corrected. The permit must be retained in the facility files for one year.

	Yes	No	NA
1(a) Procedure provided, reviewed, and enforced?	_____	_____	_____
(b) All job procedures reviewed and understood? Training completed?	_____	_____	_____
(c) Person on site at all times to enforce all procedures?	_____	_____	_____
(d) Material safety data sheet (MSDS) reviewed?	_____	_____	_____
2(a) Welding, cutting, open flames present? Welding permit approved and posted?	_____	_____	_____
3(a) Confined space isolated?	_____	_____	_____
(b) Lock-and-tag procedure followed?	_____	_____	_____
(c) Power sources "OFF"? Locked out?	_____	_____	_____
(d) Electrical hazards isolated, removed, or tagged?	_____	_____	_____
(e) Rotating equipment locked out, removed, or disconnected?	_____	_____	_____
(f) Lines carrying materials to and from confined space blanked off, section removed, or locked by two valves and drained? Drain valve locked open and tagged?	_____	_____	_____
(g) Contents removed and space flushed?	_____	_____	_____
4(a) Confined space atmosphere prepared and monitored?	_____	_____	_____
(b) Purged?	_____	_____	_____
(c) Flanges/access doors removed? Manholes open?	_____	_____	_____
(d) Continuous ventilation provided?	_____	_____	_____
(e) Oxygen level maintained over 19.5 percent but less than 23 percent?	_____	_____	_____
(f) Continuous air monitoring equipment provided? Operational?	_____	_____	_____
5(a) Personal protective equipment (PPE) provided? Specific instructions given for use?	_____	_____	_____
(b) Air lines, self-contained breathing apparatus (SCBA) or other approved respirators provided?	_____	_____	_____
(c) Safety harness with "D" ring and life line provided?	_____	_____	_____
(d) Head, hearing, hand, foot, and body protection provided?	_____	_____	_____
(e) Lighting equipment of approved type provided and grounded?	_____	_____	_____
(f) Fire extinguishers readily available?	_____	_____	_____
(g) Walking/working surfaces protected from slippage?	_____	_____	_____
6(a) Attendant standing outside of space trained and prepared to respond to emergencies as instructed?	_____	_____	_____
(b) Rescue equipment provided at the confined space?	_____	_____	_____
(c) Emergency alarms or communications available?	_____	_____	_____

Note: This list of items is not intended to be all inclusive; certain jobs may require additional specifications.

Atmospheric monitoring equipment: _____

Preentry atmospheric monitoring results:

Levels	At Entry	Inside	4'	8'	12'	16'	20'
Oxygen	_____	_____	_____	_____	_____	_____	_____
Combustible gas/vapor	_____	_____	_____	_____	_____	_____	_____
Toxic substances	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Evacuation criteria: _____