

**MAINE DEPARTMENT OF TRANSPORTATION
BRIDGE PROGRAM
GEOTECHNICAL SECTION
AUGUSTA, MAINE**

GEOTECHNICAL DATA REPORT

For the Replacement of:

**KNIGHTS HILL BRIDGE
OVER MESERVY BROOK
STATE ROUTE 52
LINCOLNVILLE, MAINE**

Compiled by:

Michael J. Moreau, P.E.
Geotechnical Engineer

Waldo County
PIN 12676.00

Soils Report No. 2008-111
Bridge No. 3194

October 22, 2008

Driller: MaineDOT	Elevation (ft.): 166.6	Auger ID/OD: 5" Solid Stem
Operator: E. Giguere	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: G. Lidstone	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 10/17/05-10/18/05	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 13+89.9, 7.6 Rt.	Casing ID/OD: HW	Water Level*: 8.0' bgs ^a

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _U = Insitu Field Vane Shear Strength (psf) T _V = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _U (lab) = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test
---	--	--

Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows					
0						SSA	165.95	PAVEMENT			
							164.60	Brown, damp, GRAVEL, sand, trace silt, (Fill).		0.7	
5	ID	24/10	5.0 - 7.0	2/1/1/2	2	10		Brown, moist, very loose, silty fine SAND, trace medium to coarse sand, trace gravel.		2.0	
						7					
						13					
						7	158.60	-----		8.0	
10	2D/AB	24/9	10.0 - 12.0	6/3/1/1	4	9	155.80	(2D/A) 10.0-10.8' bgs. Brown, wet, very loose, silty fine to medium SAND, trace coarse sand.		10.8	
						7		(2D/B) 10.8-12.0' bgs. Brown, wet, very loose, silty fine SAND, trace organics.			
						9					
						24	153.40	-----		13.2	
15	3D	24/15	15.0 - 17.0	6/3/3/3	6	18		Olive, moist, medium stiff, SILT, trace clay.			
						17					
						14	149.60	-----	Grey, clayey SILT.		17.0
						19					
20	4D	24/13	20.0 - 22.0	10/14/10/10	24	19	147.60	-----	Grey, moist, medium dense, silty fine SAND, trace medium to coarse sand, trace gravel, (Till). Washed ahead of casing from 20.0-25.0' bgs.		19.0
						13					
						17					
						14					
25						16					

Remarks:
^aStatic water levels were not achieved

Driller: MaineDOT	Elevation (ft.): 166.6	Auger ID/OD: 5" Solid Stem
Operator: E. Giguere	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: G. Lidstone	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 10/17/05-10/18/05	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 13+89.9, 7.6 Rt.	Casing ID/OD: HW	Water Level*: 8.0' bgs ^a

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _u (lab) = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test
---	--	--

Depth (ft.)	Sample Information							Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows					
25	5D	24/10	25.0 - 27.0	8/17/24/26	41	19	141.60		Grey, damp, hard, SILT, trace sand, trace gravel, (Till). Washed ahead of casing from 25.0-30.0' bgs.		
									29.0		
30	6D	15.6/11	30.0 - 31.3	27/52/50 ^b		26	137.60		b50 blows for 4 inches Grey, damp, very dense, silty fine to medium SAND, little coarse sand, trace gravel (Till). Washed ahead of casing from 30.0-35.0' bgs.		
35	7D	18/12	35.0 - 36.5	31/35/52	87	OPEN HOLE	131.60		Brown, moist, very dense, silty fine SAND, trace medium to coarse sand, trace gravel, (Till). Washed ahead of casing from 35.0-40.0' bgs.		
40	8D	18/12	40.0 - 41.5	33/52/97	149		128.60		Grey, moist, very dense, silty fine SAND, trace medium to coarse sand, (Till).		
50							125.10		Bottom of Exploration at 41.5 feet below ground surface.		

Remarks:
^aStatic water levels were not achieved

Driller: MaineDOT	Elevation (ft.): 165.4	Auger ID/OD: 5" Solid Stem
Operator: E. Giguere	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: G. Lidstone	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 10/18/05; 10:15-16:00	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 13+46.6, 8.7 Lt.	Casing ID/OD: HW	Water Level*: 9.7' bgs ^a

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _U = Insitu Field Vane Shear Strength (psf) T _V = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _u (lab) = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test
---	--	--

Sample Information										Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
Depth (ft.)	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows	Elevation (ft.)	Graphic Log			
0						SSA	164.80				
							162.40				
5	ID/AB	24/7	5.0 - 7.0	2/4/4/2	8	11	158.70				
						16					
						14					
						15					
						35					
10	2D	24/14	10.0 - 12.0	11/4/4/4	8	21	155.70				
						11					
						17					
						16					
15	3D	24/18	15.0 - 17.0	1/1/1/2	2	20	151.90				
						18					
						18					
						19					
						61					
20	4D	24/13	20.0 - 22.0	17/17/15/17	32	18	148.40				
						21					
						24					
						45					
25						83					

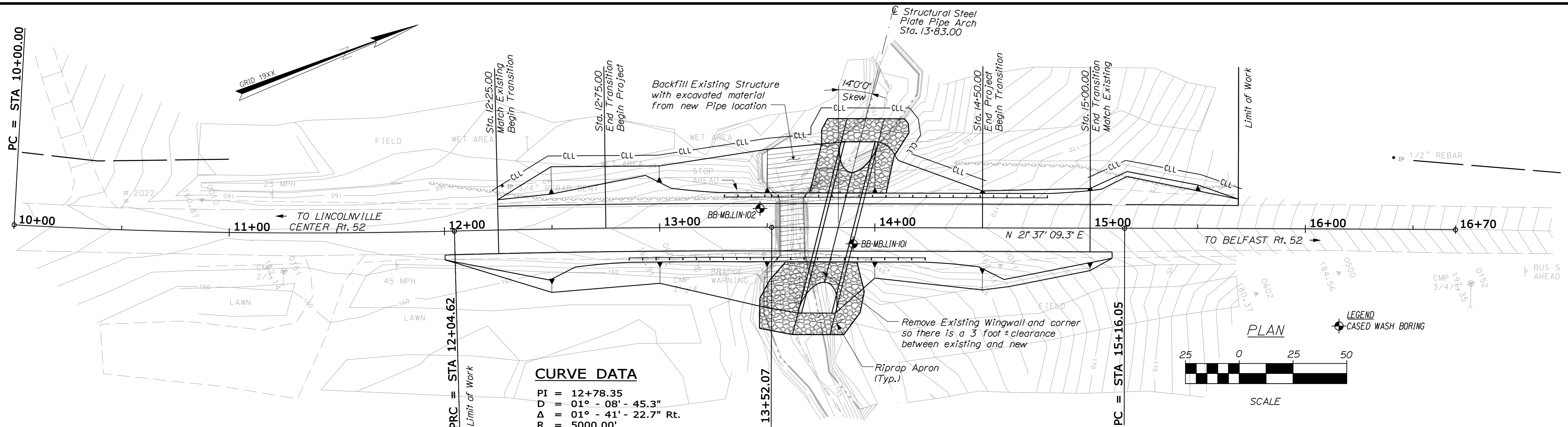
Remarks:
^aStatic water levels were not achieved

Driller: MaineDOT	Elevation (ft.): 165.4	Auger ID/OD: 5" Solid Stem
Operator: E. Giguere	Datum: NAVD 88	Sampler: Standard Split Spoon
Logged By: G. Lidstone	Rig Type: CME 45C	Hammer Wt./Fall: 140#/30"
Date Start/Finish: 10/18/05; 10:15-16:00	Drilling Method: Cased Wash Boring	Core Barrel: N/A
Boring Location: 13+46.6, 8.7 Lt.	Casing ID/OD: HW	Water Level*: 9.7' bgs ^a

Definitions: D = Split Spoon Sample MD = Unsuccessful Split Spoon Sample attempt U = Thin Wall Tube Sample R = Rock Core Sample V = Insitu Vane Shear Test SSA = Solid Stem Auger	Definitions: S _u = Insitu Field Vane Shear Strength (psf) T _v = Pocket Torvane Shear Strength (psf) q _p = Unconfined Compressive Strength (ksf) S _u (lab) = Lab Vane Shear Strength (psf) WOH = weight of 140lb. hammer WOR = weight of rods	Definitions: WC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index G = Grain Size Analysis C = Consolidation Test
---	--	--

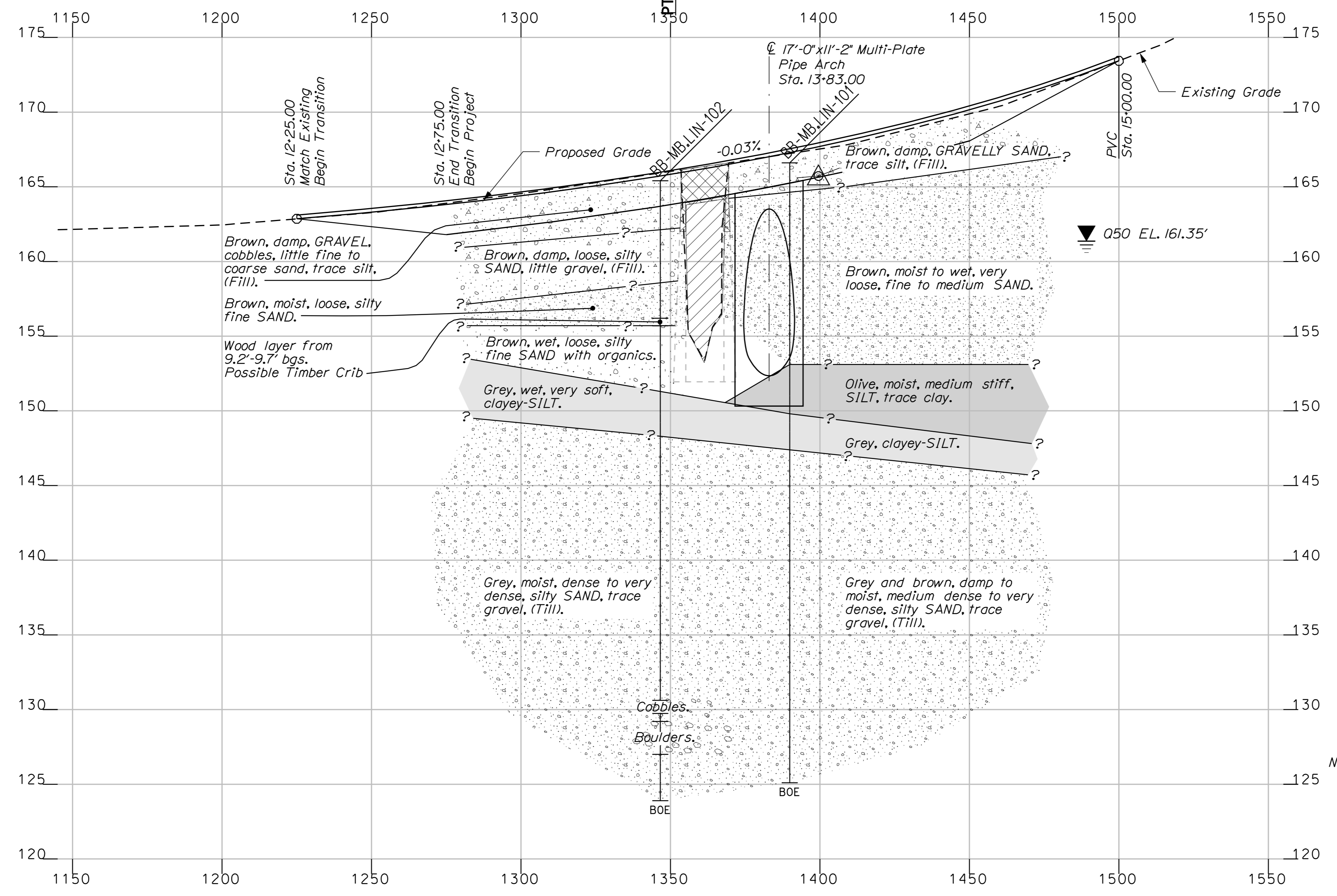
Depth (ft.)	Sample Information								Elevation (ft.)	Graphic Log	Visual Description and Remarks	Laboratory Testing Results/AASHTO and Unified Class.
	Sample No.	Pen./Rec. (in.)	Sample Depth (ft.)	Blows (6 in.) Shear Strength (psf) or RQD (%)	N-value	Casing Blows						
25	5D	24/11	25.0 - 27.0	14/20/22/31	42	25		136.40		Grey, moist, dense, silty fine to medium SAND, little coarse sand, trace gravel (Till). Washed ahead of 25.0-30.0' bgs.		
						31						
						23						
						21						
30	6D	18/8	30.0 - 31.5	16/17/63	80	25		136.40		Grey, moist, very dense, silty fine to medium SAND, little coarse sand, trace silt layers (Till). Washed ahead of casing from 30.0-35.0' bgs.		
						26						
						20						
						28						
35	MD	0/0	35.0 - 35.0	50(0")	---	130		127.00		Cobble from 34.8-35.6' bgs. Failed sample attempt. Washed ahead from 35.0-40.0' bgs. Boulder from 36.2-38.4' bgs.		
40	7D	18/11	40.0 - 41.5	38/67/80	147			123.90		Grey, moist, very dense, silty fine to medium SAND, little coarse sand, (Till).		
50								123.90		Bottom of Exploration at 41.5 feet below ground surface.		

Remarks:
^aStatic water levels were not achieved



CURVE DATA

PI	=	12+78.35
D	=	01° - 08' - 45.3"
Δ	=	01° - 41' - 22.7" Rt.
R	=	5000.00'
L	=	147.45'
T	=	73.73'
E	=	0.54'



Note: This generalized interpretive soil profile is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and have been developed by interpretations of widely spaced explorations and samples. Actual soil transitions may vary and are probably more erratic. For more specific information refer to the exploration logs.

STATE OF MAINE DEPARTMENT OF TRANSPORTATION		12676.00	
BRIDGE NO. 3194		PIN 12676.00	
KNIGHTS HILL BRIDGE MESERVY BROOK LINCOLNVILLE WALDO COUNTY		BORING LOCATION PLAN & INTERPRETIVE SUBSURFACE PROFILE	
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED
N. BENIGNI	L. KRUSINSKI	T. WHITE	M. MENTALL
DATE	SEPT 2008	SIGNATURE	P.E. NUMBER
REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4
FIELD CHANGES		DATE	
SHEET NUMBER		4	
		OF 11	

Maine Department of Transportation		Soil/Brock Exploration Log		US CUSTOMARY UNITS		Project: Knights Hill Bridge over Meservy Brook		Location: Lincolnville, Maine		Boring No.: BB-MB.LIN-102			
Driller: Maim001		Elevation (ft.): 165.4		Auger ID/OD: 5" Solid Stem		Operator: E. Giguere		Datum: NAVD 88		Sampler: Standard Split Spoon			
Logged By: C. Lidstone		Rig Type: CME 45C		Blow Rate: 140W/30"		Date Start/Finish: 10/18/05-10/18/05		Drilling Method: Cased Wash Boring		Core Barrel: N/A			
Boring Location: 13446.6, 8.7 ft.		Casing ID/OD: HW		Water Level#: 9.7' bgs		Soil Notes:		Soil Notes:		Soil Notes:			
0 = Split Spoon Sample 10 = Unsuccessful Split Spoon Sample attempt 11 = Thin Wall Tube Sample 12 = Thick Core Sample 13 = In Situ Vane Shear Test 14 = Solid Stem Auger		Su = In Situ Field Vane Shear Strength (psf) Sv = Pocket Torque Shear Strength (psf) Sc = Unconfined Compressive Strength (psf) Sp = 150 Torq Shear Strength (psf) Wt = Moisture Weight of 140lb. hammer Wp = weight of cone, Wc = weight of casing		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test		15 = In Situ Field Vane Shear Strength (psf) 16 = Unsuccessful Split Spoon Sample attempt 17 = Thin Wall Tube Sample 18 = Thick Core Sample 19 = In Situ Vane Shear Test 20 = Solid Stem Auger		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test		15 = In Situ Field Vane Shear Strength (psf) 16 = Unsuccessful Split Spoon Sample attempt 17 = Thin Wall Tube Sample 18 = Thick Core Sample 19 = In Situ Vane Shear Test 20 = Solid Stem Auger		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test	
Depth (ft.)	Sample No.	Pen./Blow (in)	Sample Depth (ft.)	Blow (1/8 in. Strength or 100 (15)	Penetration (ft.)	Soil Description and Remarks	Laboratory Testing Results/ASHTO and Unified Class						
0					SSA	PAVEMENT							
4						Brown, damp, GRAVEL, cobbles, little fine to coarse sand, trace silt. (F111).							
5	10/AB	24/7	5.00 - 7.00	2/4/4/2	8	11	(10/A) 5.0-6.7' bgs. Brown, damp, loose, silty fine to coarse SAND, little gravel. (F111).						
6					16		(10/B) 6.7-7.0' bgs. Brown, moist, loose, silty fine SAND.						
7					14								
8					15								
9					35		WOOD from 9.2 to 9.7' bgs. Possible timber crib.						
10	20	24/14	10.00 - 12.00	11/4/4/4	8	21	Brown, wet, loose, silty fine SAND with organics.						
11					11								
12					17								
13					16								
14					18								
15	30	24/18	15.00 - 17.00	1/1/1/2	2	20	Grey, wet, very soft, clayey SILT.						
16					18								
17					19								
18					61								
19					93								
20	40	24/13	20.00 - 23.00	17/17/15/17	32	18	Grey, moist, dense, silty fine to medium SAND, little coarse sand, trace gravel (F111). Washed ahead of casing from 20.0-25.0' bgs.						
21					21								
22					24								
23					45								
24					83								
25	50	24/11	25.00 - 27.00	14/20/22/31	42	25	Grey, moist, dense, silty fine to medium SAND, little coarse sand, trace gravel (F111). Washed ahead of casing from 25.0-30.0' bgs.						
26					31								
27					23								
28					21								
29					48								
30	60	18/18	30.00 - 31.50	16/17/63	80	25	Grey, moist, very dense, silty fine to medium SAND, little coarse sand, trace silt layers (F111). Washed ahead of casing from 30.0-35.0' bgs.						
31					26								
32					20								
33					28								
34					130								
35	70	0/0	35.00 - 35.00	50(0")	---	---	Cobble from 34.8-35.6' bgs. Failed sample attempt. Washed ahead from 35.0-40.0' bgs. Boulder from 36.2-38.4' bgs.						
36													
37													
38													
39													
40	80	18/11	40.00 - 41.50	38/67/80	147		Grey, moist, very dense, silty fine to medium SAND, little coarse sand. (F111).						
41													
42													
43													
44													
45													
46													
47													
48													
49													
50													
Remarks: *Static water levels were not achieved													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1					
*Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.								Boring No.: BB-MB.LIN-102					

Maine Department of Transportation		Soil/Brock Exploration Log		US CUSTOMARY UNITS		Project: Knights Hill Bridge over Meservy Brook		Location: Lincolnville, Maine		Boring No.: BB-MB.LIN-101			
Driller: Maim001		Elevation (ft.): 166.6		Auger ID/OD: 5" Solid Stem		Operator: E. Giguere		Datum: NAVD 88		Sampler: Standard Split Spoon			
Logged By: C. Lidstone		Rig Type: CME 45C		Blow Rate: 140W/30"		Date Start/Finish: 10/17/05-10/18/05		Drilling Method: Cased Wash Boring		Core Barrel: N/A			
Boring Location: 13449.9, 7.6 ft.		Casing ID/OD: HW		Water Level#: 8.0' bgs		Soil Notes:		Soil Notes:		Soil Notes:			
0 = Split Spoon Sample 10 = Unsuccessful Split Spoon Sample attempt 11 = Thin Wall Tube Sample 12 = Thick Core Sample 13 = In Situ Vane Shear Test 14 = Solid Stem Auger		Su = In Situ Field Vane Shear Strength (psf) Sv = Pocket Torque Shear Strength (psf) Sc = Unconfined Compressive Strength (psf) Sp = 150 Torq Shear Strength (psf) Wt = Moisture Weight of 140lb. hammer Wp = weight of cone, Wc = weight of casing		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test		15 = In Situ Field Vane Shear Strength (psf) 16 = Unsuccessful Split Spoon Sample attempt 17 = Thin Wall Tube Sample 18 = Thick Core Sample 19 = In Situ Vane Shear Test 20 = Solid Stem Auger		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test		15 = In Situ Field Vane Shear Strength (psf) 16 = Unsuccessful Split Spoon Sample attempt 17 = Thin Wall Tube Sample 18 = Thick Core Sample 19 = In Situ Vane Shear Test 20 = Solid Stem Auger		MC = water content, percent LL = Liquid Limit PL = Plastic Limit PI = Plasticity Index C = Grain Size Analysis G = Consolidation Test	
Depth (ft.)	Sample No.	Pen./Blow (in)	Sample Depth (ft.)	Blow (1/8 in. Strength or 100 (15)	Penetration (ft.)	Soil Description and Remarks	Laboratory Testing Results/ASHTO and Unified Class						
0					SSA	PAVEMENT							
4						Brown, damp, GRAVEL, sand, trace silt. (F111).							
5	10	24/10	5.00 - 7.00	2/1/1/2	2	10	Brown, moist, very loose, silty fine SAND, trace medium to coarse sand, trace gravel.						
6					7								
7					7								
8					13								
9					7								
10	20/AB	24/9	10.00 - 12.00	6/3/1/1	4	9	(20/A) 10.0-10.8' bgs. Brown, wet, very loose, silty fine to medium SAND, trace coarse sand. (20/B) 10.8-12.0' bgs. Brown, wet, very loose, silty fine SAND, trace organics.						
11					5								
12					24								
13					38								
14					17								
15	30	24/15	15.00 - 17.00	6/3/3/3	6	18	Olive, moist, medium stiff, SILT, trace clay.						
16					17								
17					14								
18					19								
19					58								
20	40	24/13	20.00 - 23.00	10/14/10/10	24	19	Grey, moist, medium dense, silty fine SAND, trace medium to coarse sand, trace gravel (F111). Washed ahead of casing from 20.0-25.0' bgs.						
21					13								
22					17								
23					14								
24					16								
25	50	24/10	25.00 - 27.00	8/17/24/26	41	19	Grey, moist, medium dense, silty fine SAND, trace medium to coarse sand, trace gravel (F111). Washed ahead of casing from 25.0-30.0' bgs.						
26					17								
27					14								
28					14								
29					36								
30	60	15/8/11	30.00 - 31.50	27/52/50	26	26	550 blows for 4 inches. Grey, damp, very dense, silty fine to medium SAND, little coarse sand, trace gravel (F111). Washed ahead of casing from 30.0-35.0' bgs.						
31					25								
32					26								
33					45								
34					82								
35	70	18/12	35.00 - 36.50	31/35/52	87	31	Brown, moist, very dense, silty fine SAND, trace medium to coarse sand, trace gravel (F111). Washed ahead of casing from 35.0-40.0' bgs.						
36													
37													
38													
39													
40	80	18/12	40.00 - 41.50	33/52/97	149		Grey, moist, very dense, silty fine SAND, trace medium to coarse sand. (F111).						
41													
42													
43													
44													
45													
46													
47													
48													
49													
50													
Remarks: *Static water levels were not achieved													
Stratification lines represent approximate boundaries between soil types; transitions may be gradual.								Page 1 of 1					
*Water level readings have been made at times and under conditions stated. Groundwater fluctuations may occur due to conditions other than those present at the time measurements were made.								Boring No.: BB-MB.LIN-101					

STATE OF MAINE DEPARTMENT OF TRANSPORTATION 12676.00 PIN 12676.00 BRIDGE NO. 3194 BRIDGE PLANS	KNIGHTS HILL BRIDGE MESERVY BROOK WALDO COUNTY LINCOLNVILLE BORING LOGS	PROJ. MANAGER: N. BENCOIT CHECKED-REVIEWED: L. KRUSINSKI DESIGNED-DETAILED: M. MENTALL REVISIONS: 1 REVISIONS: 2 REVISIONS: 3 REVISIONS: 4 FIELD CHANGES	DATE: OCT 2008 BY: T. WHITE M. MENTALL SIGNATURE: _____ P.E. NUMBER: _____ DATE: _____	SHEET NUMBER 5 OF 11
---	---	---	---	----------------------------