MEASUREMENT OF HYDRAULIC CONDUCTIVITY OF SATURATED POROUS MATERIALS
USING A FLEXIBLE WALL PERMEAMETER
ASTM D 5084 - 03 METHOD C TEST WITH INCREASING TAILWATER LEVEL
FLUID: DEAIRED TAP WATER WITH 0.005 N CaSO4

PROJECT NAME:	GeoPro Inc.	PROJECT NUMBER:	02106307.0005
LOCATION:		DATE:	2/8/2010
		PANEL IDENTIFICATION:	Lenexa Perm Board
SAMPLE ID:	GEOPRO'S THERMAL GROUT SELECT 1.00	BURETTE AREA:	0.312 cm^2
SAMPLE DESCR.:	BENTONITE ("THERMAL GROUT SELECT"): 11.11%	BURETTE INCREMENT LENGTH:	1.000 cm
	SAND (SHORT MOUNTAIN GLASS): 55.56% DEIONIZED WATER: 33.32%	VOLUME PER INCREMENT:	0.312 cm^3

INITIAL

MOISTURE%	DENSITY			
W & T, g	WET WT, g	128.9		
D & T, g	DIA, in	2.424	6.16	cm
T, g	HT, in	0.998	2.54	cm
	AREA		29.76	cm^2
MOIST-	DENSITY:	106.6	PCF WET	
URE, %	DENSITY:		PCF DRY	

ADDITIONAL DATA

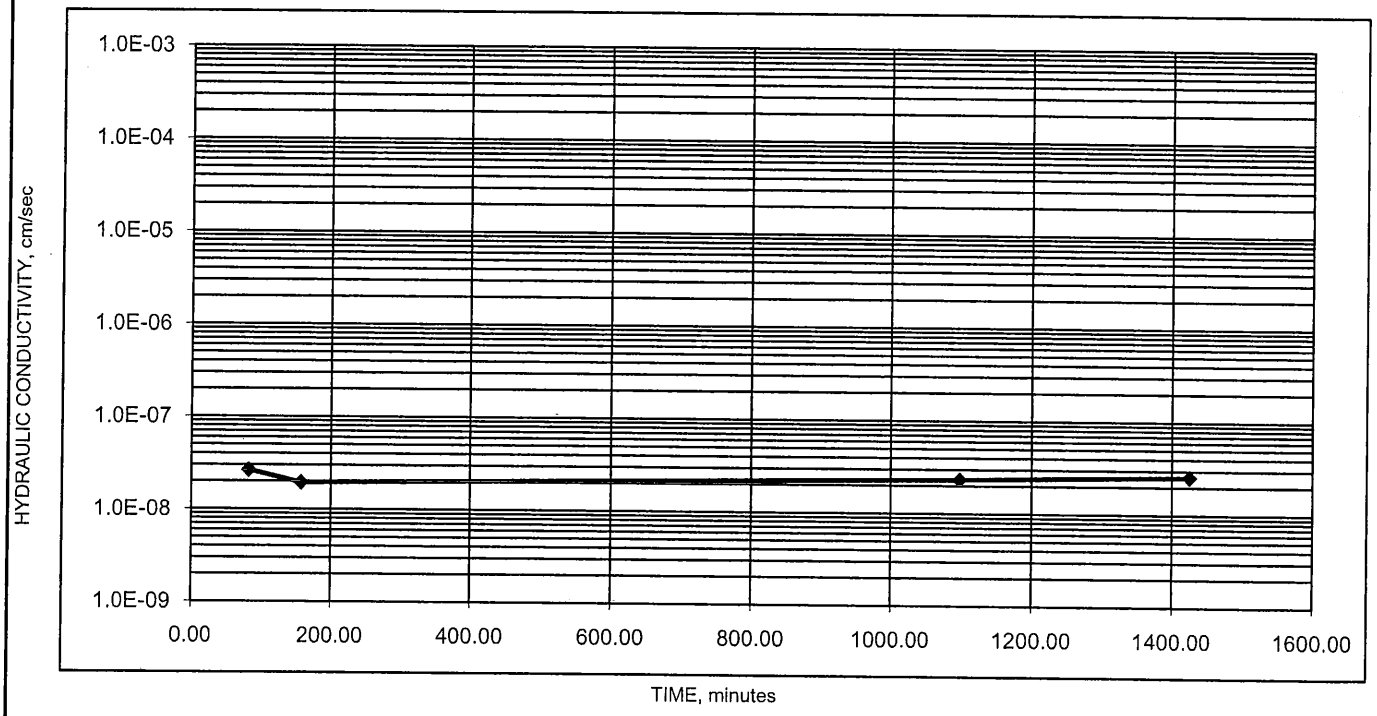
SPECIFIC GRAVITY:	2.70	RECOMPACTED?:	YES
SPECIFIC GRAVITY:	ASSUMED	PROCTOR, pcf:	NA
POROSITY, %:	NA	OPTIMUM, %:	NA
SATURATION, %:	NA	COMPACTION, %:	NA
VOID RATIO:	NA	OVER OPTIMUM, %:	NA

SATURATION:	LATERAL PRESS.:	104.0	psi	BACK PRESSURE (=UPPER=LOWER):	100.0	psi
DURING TEST:	LATERAL PRESS.:	104.0	psi	H2: 100.0 psi	H1: 100.0	psi
				BIAS PRESSURE (=H1-H2)	0.0	psi

H1 VALUE	H2 VALUE	ELAPSED TIME, min	DELTA H cm	Ln H1/H2	HYD CON k, cm/sec	OUT FLOW cm^3	IN FLOW cm^3	OUT/IN RATIO	HYD GRAD	% FROM MEAN k	TEMP.: C	TEMP. CORR.:
10.2	63.3	0.00	53.1									
10.5	63.0	82.00	52.5	0.011364	2.64E-08	0.09	0.09	1.00	20.7	11	26.5	0.860
10.7	62.8	157.00	52.1	0.007648	1.94E-08	0.06	0.06	1.00	20.5	18	26.6	0.858
13.8	60.3	1098.00	46.5	0.113713	2.34E-08	0.97	0.78	1.24	18.3	2	25.9	0.871
14.8	59.3	1425.00	44.5	0.043963	2.57E-08	0.31	0.31	1.00	17.5	8	26.4	0.862

HYDRAULIC CONDUCTIVITY (k_{20}) = AVERAGE 2.4E-08 cm/sec

MAXIMUM	1.0E-03 TO 1.0E-04	2	0.75<	30	% < 25 AT
HYDRAULIC	1.0E-04 TO 1.0E-05	5	RATIO	MAX	> 1.0E-8
GRADIENT	1.0E-05 TO 1.0E-06	10	<1.25	HYDRAULIC	OR
	1.0E-06 TO 1.0E-07	20		GRADIENT	% < 50 AT
	less than 1.0E-07	30		ALLOWED	< 1.0E-8



Terracon

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USING A FLEXIBLE WALL PERMEAMETER
ASTM D 5084 - 03 METHOD C TEST WITH INCREASING TAILWATER LEVEL
FLUID: DEAIRED TAP WATER WITH 0.005 N CaSO4

PROJECT NAME:	GeoPro Inc.	PROJECT NUMBER:	02106307.0006
LOCATION:		DATE:	2/8/2010
		PANEL IDENTIFICATION:	Lenexa Perm Board
SAMPLE ID:	GEOPRO'S THERMAL GROUT SELECT 1.20	BURETTE AREA:	0.312 cm^2
SAMPLE DESCR.:	BENTONITE ("THERMAL GROUT SELECT"): 7.94%	BURETTE INCREMENT LENGTH:	1.000 cm
	SAND (SHORT MOUNTAIN GLASS): 63.5% DEIONIZED WATER: 28.56%	VOLUME PER INCREMENT:	0.312 cm^3

INITIAL

MOISTURE%	DENSITY			
W & T, g	WET WT, g	135.7		
D & T, g	DIA, in	2.424	6.16	cm
T, g	HT, in	0.990	2.51	cm
	AREA		29.77	cm^2
MOIST-	DENSITY:	113.1	PCF WET	
URE, %	DENSITY:		PCF DRY	

ADDITIONAL DATA

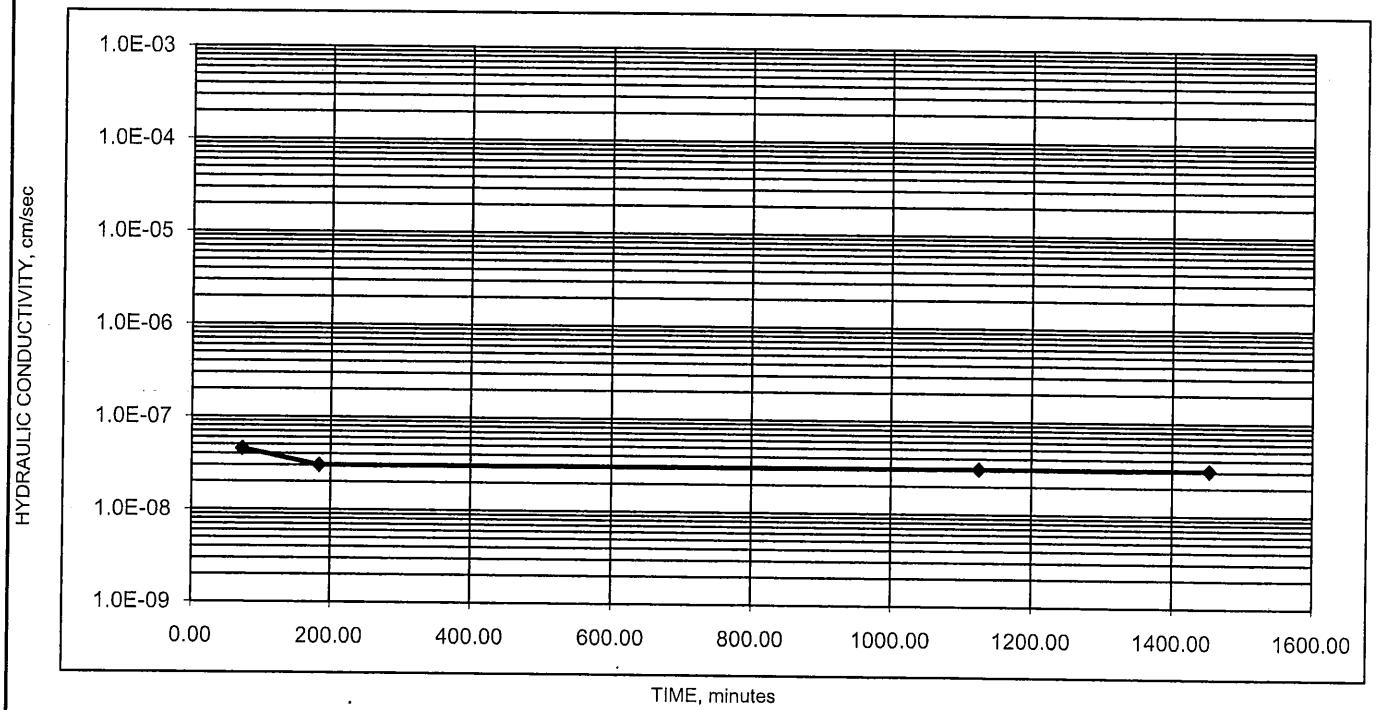
SPECIFIC GRAVITY:	2.70	RECOMPACTED?:	YES
SPECIFIC GRAVITY:	ASSUMED	PROCTOR, pcf:	NA
POROSITY, %:	NA	OPTIMUM, %:	NA
SATURATION, %:	NA	COMPACTION, %:	NA
VOID RATIO:	NA	OVER OPTIMUM, %:	NA

SATURATION:	LATERAL PRESS.:	104.0	psi	BACK PRESSURE (=UPPER=LOWER):	100.0	psi
DURING TEST:	LATERAL PRESS.:	104.0	psi	H2: 100.0 psi	H1: 100.0	psi
				BIAS PRESSURE (=H1-H2)	0.0	psi

H1 VALUE	H2 VALUE	ELAPSED TIME, min	DELTA H cm	Ln H1/H2	HYD CON k, cm/sec	OUT FLOW cm^3	IN FLOW cm^3	OUT/IN RATIO	HYD GRAD	% FROM MEAN k	TEMP.: C	TEMP. CORR.:
20.1	54.8	0.00	34.7									
20.4	54.5	73.00	34.1	0.017442	4.51E-08	0.09	0.09	1.00	13.6	32	26.5	0.860
20.7	54.2	184.00	33.5	0.017752	3.02E-08	0.09	0.09	1.00	13.3	12	26.6	0.858
23.3	52.1	1125.00	28.8	0.151170	3.08E-08	0.81	0.66	1.24	11.5	10	25.9	0.871
24.1	51.4	1453.00	27.3	0.053489	3.09E-08	0.25	0.22	1.14	10.9	10	26.4	0.862

HYDRAULIC CONDUCTIVITY (k_{20}) = AVERAGE 3.4E-08 cm/sec

MAXIMUM	1.0E-03 TO	1.0E-04	2	0.75<	30 % < 25 AT
HYDRAULIC	1.0E-04 TO	1.0E-05	5	RATIO	MAX > 1.0E-8
GRADIENT	1.0E-05 TO	1.0E-06	10	<1.25	HYDRAULIC OR
	1.0E-06 TO	1.0E-07	20		GRADIENT % < 50 AT
	less than	1.0E-07	30		ALLOWED < 1.0E-8



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