LAMPIRAN

Lampiran 1. Indeks properties tanah

LABORATORIUM GEOTEKNIK
JURUSAN TEKNIK SIPIL, FAKULTAS TEKNIK
UNIVERSITAS MUHAMMADIYAH YOGYAKARTA
JL. BRAWIJAYA, TAMAN TIRTO, KASIHAN BANTUL, YOGYAKARTA 55183
TELP. 0274-387656 (HUNTING)

KADAR AIR

Project : Tugas Akhir
Location : -
No. : -
Depth : -
Date : -
Made by : Asih Susanti

No.	Uraian	Satuan	Benda Uji		
			A1	A2	A3
1	Berat Cawan Kosong	g	9.41	9.19	9.45
2	Berat Cawan + Tanah Basah	g	29.41	29.19	29.45
3	Berat Cawan + Tanah Kering	g	26.7	26.53	26.84
4	Berat Air	g	2.71	2.66	2.61
5	Berat Tanah Kering	g	17.29	17.34	17.39
6	Kadar Air	%	15.7	15.3	15.0
7	Kadar Air rata-rata	%		15.3	

GEOTECHNICAL LABORATORY - CIVIL ENGINEERING DEPT. - UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

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BERAT JENIS

Project : Tugas Akhir
Location : -
No. : -
Depth : -
Date : -
Made by : Asih Susanti

No.	Uraian	Satuan	A1	A2	A3
1	Berat Piknometer kosong	g	25.79	22.86	27.36
2	Berat Piknometer + tanah kering	g	35.79	32.86	37.36
3	Berat Piknometer + tanah + air	g	82.28	79.43	83.38
4	Temperatur	C	27.6	27.5	27.7
5	Berat Volume Air	g/ml	0.99625	0.99638	0.99632
6	Berat Piknometer + air	g	76.0008	73.1664	77.0945
7	Berat Jenis,Gs.t		2.69	2.68	2.69
8	Rata-rata berat jenis			2.69	
9	Berat Jenis pada T=20'C. Gs			2.69	
10	Berat Jenis Rata-rata,GS			2.69	

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BERAT JENIS

Project : Tugas Akhir
Location : -
No. : -
Depth : -
Date : -
Made by : Asih Susanti

No.	Uraian	Satuan	Benda Uji		
			A1	A2	A3
1	Berat Cawan Kosong (W1)	g	9.41	9.19	9.45
2	Berat Cawan + Tanah Basah (W2)	g	29.41	29.19	29.45
3	Berat Cawan + Tanah Kering (W3)	g	26.7	26.53	26.84
4	Berat Air (Ww = W2-W3)	g	2.71	2.66	2.61
5	Berat Tanah Kering (Ws=W3-W1)	g	17.29	17.34	17.39
6	Kadar Air (w=Ww/Ws x 100)	%	15.67	15.34	15.01
7	Kadar Air rata-rata (w)	%	15.34		

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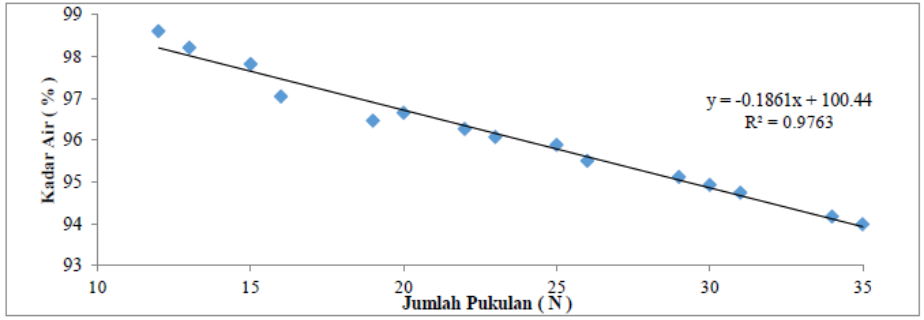
TELP; 0274-387656 (HUNTING)

BATAS CAIR

Project : Tugas Akhir
Location : -
No. : -

Depth : -
Date : -
Made by : Asih Susanti

No	Jenis Pengujian	Satuan	1			2			3			4			5		
			A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1	Jumlah Pukulan		35	34	31	30	29	26	25	22	23	20	19	16	12	15	13
2	Berat Cawan Kosong	g	13.22	9.23	10.11	9.19	9.42	9.17	9.28	9.20	9.19	8.76	12.00	9.77	9.28	9.38	9.24
3	Berat Cawan + Tanah Basah	g	33.22	29.23	30.11	29.19	29.42	29.17	29.28	29.20	29.19	28.76	32.00	29.77	29.28	29.38	29.24
4	Berat Cawan + Tanah Kering	g	23.53	19.53	20.38	19.45	19.67	19.40	19.49	19.39	19.39	18.93	22.18	19.92	19.35	19.49	19.33
5	Berat Air	g	9.69	9.70	9.73	9.74	9.75	9.77	9.79	9.81	9.80	9.83	9.82	9.85	9.93	9.89	9.91
6	Berat Tanah Kering	g	10.31	10.30	10.27	10.26	10.25	10.23	10.21	10.19	10.20	10.17	10.18	10.15	10.07	10.11	10.09
7	Kadar Air	%	93.99	94.17	94.74	94.93	95.12	95.50	95.89	96.27	96.08	96.66	96.46	97.04	98.61	97.82	98.22
8	Rata - rata Kadar Air	%		94.30			95.19			96.08			96.72			98.22	
9	Batas Cair (25)	%								95.8							



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TELP. 0274-387656 (HUNTING)

BATAS PLASTIS

Project : Tugas Akhir
Location : -
No. : -
Depth : -
Date : -
Made by : Asih Susanti

No	Uraian	Satuan	Nomor Cawan 1	Nomor Cawan 2
1	Berat Cawan Kosong	g	9.4	9.18
2	Berat Cawan + Tanah Basah	g	29.4	29.18
3	Berat Cawan + Tanah Kering	g	24.27	25.34
4	Berat Air	g	5.13	3.84
5	Berat Tanah Kering	g	14.87	16.16
6	Kadar Air	%	34.499	23.7624
7	Kadar Air Rata-rata	%	29.13	

catatan : batas plastis = kadar air rata-rata

Batas Cair, (%)	95.8
Batas Plastis,PL (%)	29.1
Indeks Plastisitas, PI(%)	66.7

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TELP. 0274-387656 (HUNTING)

BATAS SUSUT

Project : Tugas Akhir
Location : -
No. : -
Depth : -
Date : -
Made by : Asih Susanti

No.	Uraian	Satuan	Nomor Cawan A1	Nomor Cawan A2
1	Berat Cawan Susut	g	11.11	10.14
2	Berat Cawan Susut + Pasta Tanah	g	41.49	42.45
3	Berat Cawan Susut + Tanah Kering	g	33.21	33.03
4	Berat Tanah Kering	g	22.1	22.89
5	Kadar Air Tanah Awal	%	37.47	41.15
6	Berat Tanah Kering + Lilin	g	22.67	22.48
7	Berat Tanah Kering + Lilin Dalam Air	g	7.47	7.17
8	Berat Air Yang Didesak Oleh Tanah Kering + Lilin	g	15.2	15.31
9	Volume Tanah Kering + Lilin	cm3	15.2	15.31
10	Berat Lapisan Lilin Pada Tanah Kering	g	0.57	-0.41
11	Volume Lapisan Lilin Pada Tanah Kering	cm3	0.402107	-0.28923
12	Volume Tanah Kering	cm3	14.80	15.59923
13	Batas Susut Tanah	%	6.8	15
14	Batas Susut Tanah Rata-rata	%	10.9	

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JL. LINGKAR LUAR SELATAN, TAMAN TIRTO, KASIHAN BANTUL, YOGYAKARTA 55183
TELP; 0274-387656 (HUNTING)

GRAIN SIZE ANALYSIS

Project	: Tugas Akhir	Depth	: -
Location	: -	Date	: -
Test/Boring no.	: -	Made by	: Asih Susanti

Mass of soil, W =	65	gr	Hydrometer no.		152 H
Specific Gravity,G=	2.69		Hydr. correction, a	=	0.99
K_2 = a/W x 100 =	1.526		Meniscus correction, m	=	1.0
Dispersing agent			Amount		

Sieve No.	Opening (mm)	Mass retained (gr)		Mass passing (gr)		% finer by mass e/W x 100%
4	4.750	d_1 =	0.00	e_1=	65.00	100.00
10	2.000	d_2 =	0.00	e_2=	65.00	100.00
20	0.850	d_3 =	0.89	e_3=	64.11	98.63
40	0.425	d_4 =	1.81	e_4=	62.30	95.85
60	0.250	d_5 =	1.08	e_5=	61.22	94.18
140	0.106	d_6 =	2.23	e_6=	58.99	90.75
200	0.074	d_7 =	0.72	e_7=	58.27	89.65
		Σd =	6.7			

Time	Elapsed time min.	R_1	R_2	t	R'= R_1+m	L	K	D= K*L/T	R= R'-R2+Ct	P= K_2*R%
	2	17	-1	30.1	18.0	18.37	0.0120	0.036	22.9	34.93
	5	15	-1	30	16.0	17.73	0.0120	0.023	20.8	31.74
	30	13	-1	29.9	14.0	17.31	0.0120	0.009	18.8	28.65
	60	12	-1	30.3	13.0	17.09	0.0120	0.006	18.1	27.55
	250	9	-1	29.9	10.0	16.46	0.0120	0.003	14.8	22.54
	1440	4	-1	30.1	5.0	15.39	0.0120	0.001	9.9	15.09

NOTE :

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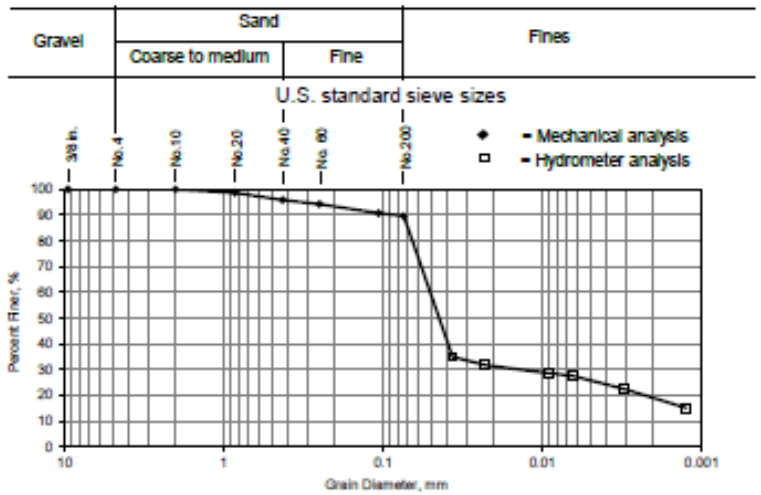
TELP; 0274-387656 (HUNTING)

GRAIN SIZE ANALYSIS

Project : Tugas Akhir
Location : -
No. : -

Depth : -
Date : -
Made by : Asih Susanti

Specific Gravity 2.69
Description of soil



Finer # 200 - 89.65 %

Gravel - 0.00 %
Sand - 10.35 %
Silt/Clay - 89.65 %

D_{10}	D_{30}	D_{60}	$C_u = D_{60}/D_{10}$	$C_c = (D_{30})^2/(D_{10} \times D_{60})$
-	-	-	-	-

LABORATORIUM GEOTEKNIK
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TELP. (0274) 387656 (HUNTING)

PEMADATAN TANAH

Project : Tugas Akhir
Location : -
No. : -

Depth : -
Date : -
Made by : Aslh Susanti

No.	Uraian	Satuan	0 ml			100 ml			150 ml			200 ml			250 ml			300 ml			350 ml			400 ml			450 ml		
1	Berat Silinder Kosong (W1)	g	1783			1784			1785			1786			1787			1788			1789			1790			1791		
2	Berat Silinder + tanah padat (W2)	g	3122			3211			3257			3289			3280			3298			3306			3358			3386		
3	Berat Tanah Padat (Wm)	g	1339			1427			1472			1483			1493			1510			1517			1568			1595		
4	Diameter Silinder (D)	cm	10.25			10.25			10.25			10.25			10.25			10.25			10.25			10.25			10.25		
5	Tinggi Silinder (h)	cm	11.88			11.88			11.88			11.88			11.88			11.88			11.88			11.88			11.88		
6	Volume Silinder (V)	cm3	980.29			980.29			980.29			980.29			980.29			980.29			980.29			980.29			980.29		
7	Berat Volume Basah	kN/m3	13.4			14.28			14.73			14.84			14.94			15.11			15.18			15.69			15.96		
8	Pemeriksaan Kadar Air																												
a	No.Cawan		1	3	10	6	A3	A1	15	A	11	8	13	9	A2	14	4	PR4	Pro 14	Pro 2	2	Z2	Pro 4	12	M1	M3	A4	Rp13	O3	
b	Berat Cawan kosong (W0)	g	9.40	9.19	9.29	10.14	9.47	9.40	9.45	9.21	9.27	9.32	12.01	13.25	9.21	9.28	9.32	9.20	8.87	8.79	9.82	9.52	8.77	13.33	11.94	9.10	9.84	9.37	12.35	
c	Berat Cawan + tanah basah (Wb)	g	29.4	29.2	29.3	30.1	29.5	29.4	29.5	29.2	29.3	29.3	32.0	33.3	29.2	29.3	29.3	29.2	28.9	28.8	29.8	29.5	28.8	33.3	31.9	29.1	29.8	29.4	32.4	
d	Berat Cawan + tanah kering (Wd)	g	28.0	27.8	27.9	28.0	27.3	27.3	26.8	26.6	26.8	26.4	29.3	30.5	26.0	26.2	26.0	25.7	25.4	25.4	25.9	25.6	24.9	29.1	27.7	24.6	25.5	24.8	27.7	
e	Berat Air	g	1.4	1.4	1.4	2.1	2.2	2.1	2.7	2.6	2.5	3.0	2.7	2.7	3.2	3.1	3.4	3.5	3.4	3.4	3.9	3.9	3.9	4.3	4.3	4.5	4.3	4.5	4.7	
f	Berat TanahKering	g	18.6	18.8	18.6	17.9	17.8	17.9	17.3	17.4	17.5	17.1	17.3	17.3	16.8	16.9	16.7	16.5	16.6	16.6	16.1	16.1	16.1	15.7	15.8	15.5	15.7	15.5	15.3	
g	Kadar Air	%	7.3	7.5	7.5	11.8	12.1	11.7	15.4	15.1	14.3	17.3	15.6	15.7	19.2	18.1	20.1	21.0	20.8	20.7	24.1	24.1	24.4	27.1	27.0	28.8	27.6	29.3	30.5	
h	Kadar Air Rata-rata	%	7.4			11.9			14.9			16.2			19.1			20.8			24.2			27.6			29.1		
9	Berat Volume Kering	kN/m3	12.48			12.77			12.82			12.77			12.54			12.51			12.22			12.3			12.36		
10	Berat Jenis		2.69			2.69			2.69			2.69			2.69			2.69			2.69			2.69			2.69		
11	ZAV	kN/m3	22.01			20			18.84			18.38			17.43			16.92			15.98			15.14			14.8		

GEOTECHNICAL LABORATORY - CIVIL ENGINEERING DEPT. - UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

Lampiran 2. Modulus elastisitas pelat

Modulus elastisitas pelat 1

MODULUS ELASTISITAS PELAT BETON (METODE *CONJUNGATED BEAMS*)

Project : Skripsi
Date
Made by : Tim TA Dr. Willis Diana

Hitungan Elastisitas Metode Conjungated Beams

Tebal pelat	=	0.02	m	E	: Modulus elastisitas (kN/m²)
Lebar pelat	=	0.1	m	Q	: Beban (kN)
Panjang pelat	=	0.7	m	L	: Panjang balok/ pelat di natara 2 tumpuan (m)
Momen inersia pelat	=	6.67E-08	m4	a	: Panjang balok/ pelat dari tumpuan ke titik beban Q (m)
a	=	0.125	m	b	: Panjang antar 2 titik beban Q (m)
b	=	0.35	m	δ	Lendutan (m)
L	=	0.6	m	I	Momen inersia penampang pelat (m4)

No	Force (kg)	Force (kN)	Pembacaan dial gauge			Lendutan (m)			modulus elastisitas (kN/m²)
			1/4 Bentang	1/2 Bentang	3/4 Bentang	1/4 Bentang	1/2 Bentang	3/4 Bentang	
1	0	0	0	0	0	0	0	0	0
2	10	0.0981	45	25	21	0.00045	0.00025	0.00021	32629746.1
3	25	0.24525	85	48	45	0.00085	0.00048	0.00045	42486648.6
4	43	0.42183	113	70	74	0.00113	0.0007	0.00074	50109967.2
5	62	0.60822	140	92	97	0.0014	0.00092	0.00097	54974028.7
6	56	0.54936	152	90	112	0.00152	0.0009	0.00112	50757382.8
7	67	0.65727	174	98	151	0.00174	0.00098	0.00151	55770229.3
8	74	0.72594	190	106	198	0.0019	0.00106	0.00198	56948141.8
9	73	0.71613	205	96	220	0.00205	0.00096	0.0022	62030506.9
10	77	0.75537	223	102	235	0.00223	0.00102	0.00235	61580648.3
11	80	0.7848	240	104	250	0.0024	0.00104	0.0025	62749511.7
12	78	0.76518	259	107	290	0.00259	0.00107	0.0029	59465425.1
13	82	0.80442	270	107	310	0.0027	0.00107	0.0031	62514934.1
14	85	0.83385	288	107	340	0.00288	0.00107	0.0034	64802065.8
15	89	0.87309	303	108	348	0.00303	0.00108	0.00348	67223319.5
16	91	0.89271	320	109	370	0.0032	0.00109	0.0037	68103369.1
17	92	0.90252	337	109	390	0.00337	0.00109	0.0039	68851757.8
18	94	0.92214	351	109	410	0.00351	0.00109	0.0041	70348535.2
19	95	0.93195	364	109	430	0.00364	0.00109	0.0043	71096923.8
20	96	0.94176	379	109	460	0.00379	0.00109	0.0046	71845312.5
21	94	0.92214	393	109	490	0.00393	0.00109	0.0049	70348535.2
22	65	0.63765	408	105	510	0.00408	0.00105	0.0051	50498416.6
23	65	0.63765	411	70	540	0.00411	0.0007	0.0054	75747624.9
24	57	0.55917	412	65	548	0.00412	0.00065	0.00548	71534443.4
25	38	0.37278	422	45	550	0.00422	0.00045	0.0055	68885019.5
26	35	0.34335	428	15	580	0.00428	0.00015	0.0058	190340185.5
27	24	0.23544	439	6	600	0.00439	0.00006	0.006	326297460.9
28	24	0.23544	447	-18	608	0.00447	-0.00018	0.00608	-108765820.3
29	24	0.23544	459	-22	635	0.00459	-0.00022	0.00635	-88990216.6
30	24	0.23544	470	-28	650	0.0047	-0.00028	0.0065	-69920884.5
31	27	0.26487	488	-38	665	0.00488	-0.00038	0.00665	-57960733.2
32	28	0.27468	498	-35	685	0.00498	-0.00035	0.00685	-65259492.2
33	28	0.27468	510	-36	710	0.0051	-0.00036	0.0071	-63446728.5
34	28	0.27468	522	-42	720	0.00522	-0.00042	0.0072	-54382910.2
35	27	0.26487	533	-46	750	0.00533	-0.00046	0.0075	-47880605.7
36	27	0.26487	549	-50	760	0.00549	-0.0005	0.0076	-44050157.2
37	27	0.26487	560	-57	765	0.0056	-0.00057	0.00765	-38640488.8
38	27	0.26487	572	-63	790	0.00572	-0.00063	0.0079	-34960442.2
39	27	0.26487	588	-69	805	0.00588	-0.00069	0.00805	-31920403.8
40	27	0.26487	603	-76	815	0.00603	-0.00076	0.00815	-28980366.6
Rata-rata									57363666.17

Modulus elastisitas pelat 2

MODULUS ELASTISITAS PELAT BETON (METODE *CONJUNGATED BEAMS*)

Project : Skripsi
Date
Made by : Tim TA Dr. Willis Diana

Hitungan Elastisitas Metode Conjungated Beams

Tebal pelat	=	0.02	m	E	: Modulus elastisitas (kN/m²)
Lebar pelat	=	0.1	m	Q	: Beban (kN)
Panjang pelat	=	0.7	m	L	: Panjang balok/ pelat di natara 2 tumpuan (m)
Momen inersia pela	=	6.67E-08	m4	a	: Panjang balok/ pelat dari tumpuan ke titik beban Q (m)
a	=	0.125	m	b	: Panjang antar 2 titik beban Q (m)
b	=	0.35	m	δ	Lendutan (m)
L	=	0.6	m	I	Momen inersia penampang pelat (m4)

No	Force (kg)	Force (kN)	Pembacaan dial gauge			Lendutan (m)			modulus elastisitas (kN/m²)
			1/4 Bentang	1/2 Bentang	3/4 Bentang	1/4 Bentang	1/2 Bentang	3/4 Bentang	
1	0	0	0	0	0	0	0	0	0.00
2	15	0.14715	22	29	36	1.4715E-06	0.00022	0.00036	55618885.40
3	31	0.30411	53	55	85	3.0411E-06	0.00053	0.00085	47713308.00
4	49	0.48069	83	72	126	4.8069E-06	0.00083	0.00126	48158360.20
5	52	0.51012	126	72	148	5.1012E-06	0.00126	0.00148	33665611.00
6	59	0.57879	169	72	155	5.7879E-06	0.00169	0.00155	28478624.50
7	61	0.59841	205	72	170	5.9841E-06	0.00205	0.0017	24273347.70
8	64	0.62784	245	72	195	6.2784E-06	0.00245	0.00195	21309221.90
9	65	0.63765	273	72	235	6.3765E-06	0.00273	0.00235	19422467.90
10	68	0.66708	320	72	254	6.6708E-06	0.0032	0.00254	17334552.60
11	71	0.69651	352	72	267	6.9651E-06	0.00352	0.00267	16453920.30
12	72	0.70632	378	73	282	7.0632E-06	0.00378	0.00282	15537974.30
13	66	0.64746	423	73	312	6.4746E-06	0.00423	0.00312	12727915.10
14	61	0.59841	470	73	343	5.9841E-06	0.0047	0.00343	10587311.20
15	63	0.61803	515	73	367	6.1803E-06	0.00515	0.00367	9979000.00
16	64	0.62784	560	73	384	6.2784E-06	0.0056	0.00384	9322784.60
17	63	0.61803	602	73	390	6.1803E-06	0.00602	0.0039	8536852.20
18	55	0.53955	653	69	408	5.3955E-06	0.00653	0.00408	6870735.20
19	44	0.43164	705	65	415	4.3164E-06	0.00705	0.00415	5091166.10
20	40	0.3924	747	65	438	0.000003924	0.00747	0.00438	4368105.20
21	38	0.37278	779	64	464	3.7278E-06	0.00779	0.00464	3979237.30
22	38	0.37278	818	64	480	3.7278E-06	0.00818	0.0048	3789518.20
23	38	0.37278	860	64	502	3.7278E-06	0.0086	0.00502	3604448.70
24	37	0.36297	920	66	540	3.6297E-06	0.0092	0.0054	3280708.20
25	37	0.36297	958	66	563	3.6297E-06	0.00958	0.00563	3150575.70
26	37	0.36297	1001	66	598	3.6297E-06	0.01001	0.00598	3015236.30
27	37	0.36297	1053	66	620	3.6297E-06	0.01053	0.0062	2866335.70
28	37	0.36297	1090	64	654	3.6297E-06	0.0109	0.00654	2769038.10
29	37	0.36297	1128	43	668	3.6297E-06	0.01128	0.00668	2675754.90
30	36	0.35316	1169	34	672	3.5316E-06	0.01169	0.00672	2512127.60
31	35	0.34335	1207	22	689	3.4335E-06	0.01207	0.00689	2365453.80
32	34	0.33354	1250	4	720	3.3354E-06	0.0125	0.0072	2218822.70
33	31	0.30411	1280	-8	760	3.0411E-06	0.0128	0.0076	1975629.20
34	30	0.2943	1322	-32	780	0.000002943	0.01322	0.0078	1851158.10
35	27	0.26487	1355	-47	815	2.6487E-06	0.01355	0.00815	1625467.10
36	27	0.26487	1390	-61	834	2.6487E-06	0.0139	0.00834	1584538.00
37	27	0.26487	1430	-74	850	2.6487E-06	0.0143	0.0085	1540215.30
38	27	0.26487	1461	-84	870	2.6487E-06	0.01461	0.0087	1507534.50
39	27	0.26487	1492	-98	893	2.6487E-06	0.01492	0.00893	1476211.70
40	26	0.25506	1518	-104	916	2.5506E-06	0.01518	0.00916	1397189.40
					Rata-rata				32402169.84

Modulus elastisitas pelat 3

MODULUS ELASTISITAS PELAT BETON (METODE *CONJUNGATED BEAMS*)

Project : Skripsi
Date
Made by : Tim TA Dr. Willis Diana

Hitungan Elastisitas Metode Conjungated Beams

Tebal pelat	=	0.02	m	E	: Modulus elastisitas (kN/m²)
Lebar pelat	=	0.1	m	Q	: Beban (kN)
Panjang pelat	=	0.7	m	L	: Panjang balok/ pelat di natara 2 tumpuan (m)
Momen inersia pelat	=	6.667E-08	m4	a	: Panjang balok/ pelat dari tumpuan ke titik beban Q (m)
a	=	0.125	m	b	: Panjang antar 2 titik beban Q (m)
b	=	0.35	m	δ	Lendutan (m)
L	=	0.6	m	I	Momen inersia penampang pelat (m4)

No	Force (kg)	Force (kN)	Pembacaan dial gauge			Lendutan (m)			Modulus elastisitas (kN/m²)
			1/4 Bentang	1/2 Bentang	3/4 Bentang	1/4 Bentang	1/2 Bentang	3/4 Bentang	
1	0	0	0	0	0	0	0	0	0.00
2	12	0.11772	45	14	62	1.1772E-06	0.00045	0.00062	21753164.10
3	21	0.20601	80	27	72	2.0601E-06	0.0008	0.00072	21413270.90
4	22	0.21582	110	30	91	2.1582E-06	0.0011	0.00091	16314873.00
5	30	0.2943	142	39	105	2.943E-06	0.00142	0.00105	17234020.80
6	26	0.25506	168	30	135	2.5506E-06	0.00168	0.00135	12624604.10
7	25	0.24525	190	20	150	2.4525E-06	0.0019	0.0015	10733469.10
8	31	0.30411	220	27	180	3.0411E-06	0.0022	0.0018	11494569.60
9	31	0.30411	243	27	188	3.0411E-06	0.00243	0.00188	10406606.30
10	37	0.36297	273	27	196	3.6297E-06	0.00273	0.00196	11055866.40
11	29	0.28449	300	18	220	2.8449E-06	0.003	0.0022	7885522.00
12	17	0.16677	312	-4	240	1.6677E-06	0.00312	0.0024	4444757.10
13	3	0.02943	328	-36	265	2.943E-07	0.00328	0.00265	746107.00
14	84	0.82404	330	-72	280	8.2404E-06	0.0033	0.0028	20764383.90
15	84	0.82404	358	-79	296	8.2404E-06	0.00358	0.00296	19140353.90
16	85	0.83385	385	-84	320	8.3385E-06	0.00385	0.0032	18009924.80
17	85	0.83385	410	-91	343	8.3385E-06	0.0041	0.00343	16911758.60
18	83	0.81423	425	-106	362	8.1423E-06	0.00425	0.00362	15930993.70
19	83	0.81423	450	-113	385	8.1423E-06	0.0045	0.00385	15045938.50
20	84	0.82404	483	-113	411	8.2404E-06	0.00483	0.00411	14186846.10
21	84	0.82404	510	-127	437	8.2404E-06	0.0051	0.00437	13435777.80
22	85	0.83385	535	-140	450	8.3385E-06	0.00535	0.0045	12960413.20
23	85	0.83385	559	-150	476	8.3385E-06	0.00559	0.00476	12403973.20
24	85	0.83385	587	-158	520	8.3385E-06	0.00587	0.0052	11812301.60
25	86	0.84366	604	-165	544	8.4366E-06	0.00604	0.00544	11614893.10
26	86	0.84366	620	-170	565	8.4366E-06	0.0062	0.00565	11315153.90
27	86	0.84366	642	-180	574	8.4366E-06	0.00642	0.00574	10927407.20
28	86	0.84366	660	-188	604	8.4366E-06	0.0066	0.00604	10629387.00
29	87	0.85347	681	-193	632	8.5347E-06	0.00681	0.00632	10421394.70
30	87	0.85347	705	-200	657	8.5347E-06	0.00705	0.00657	10066623.80
31	87	0.85347	735	-205	673	8.5347E-06	0.00735	0.00673	9655741.20
32	87	0.85347	755	-211	694	8.5347E-06	0.00755	0.00694	9399960.00
33	87	0.85347	785	-220	720	8.5347E-06	0.00785	0.0072	9040725.80
34	87	0.85347	812	-228	785	8.5347E-06	0.00812	0.00785	8740110.60
35	87	0.85347	833	-235	820	8.5347E-06	0.00833	0.0082	8519771.60
36	87	0.85347	855	-240	854	8.5347E-06	0.00855	0.00854	8300549.40
37	87	0.85347	880	-251	893	8.5347E-06	0.0088	0.00893	8064738.40
38	88	0.86328	910	-256	912	8.6328E-06	0.0091	0.00912	7888510.00
39	87	0.85347	945	-277	966	8.5347E-06	0.00945	0.00966	7510020.90
40	87	0.85347	970	-290	995	8.5347E-06	0.0097	0.00995	7316463.70
					Rata-rata				14388811.67

Lampiran 3. Analisa *beam on elastic foundation* (kering)

Pelat tanpa tiang (kering)

"BOEF.xls" Program
Version 1.2

BEAM ON ELASTIC FOUNDATION ANALYSIS

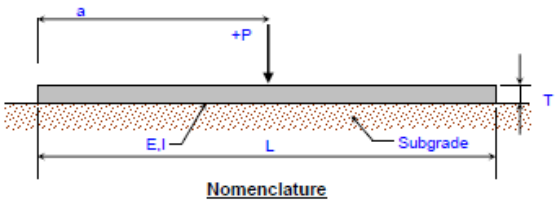
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55,809	Mpa
Subgrade, K =	823529.4118	kN/m3
Inertia, I =	4.67E-07	m^4



Nomenclature

Beam Loadings:

Full Uniform:

w = 0.0000 kN/m

Distributed:	Start b (m)	Wb (kN/m)	End e (m)	We (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Point Loads:	a (m)	P (kN)
#1:	0.3500	0.98
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Moments:	c (ft.)	M (ft-kips)
#1:		
#2:		
#3:		
#4:		

Results:

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite long

β = 12.988 β = ((K*W)/(4*E*144*I))^(1/4)

β*L = 9.09 β*L = Flexibility Factor

Beam is flexible

Max. Shears and Locations:

+V(max) = 0.49 kN @ x = 0.35 m

-V(max) = -0.49 kN @ x = 0.35 m

Max. Moments and Locations:

+M(max) = 0.02 kNm @ x = 0.35 m

-M(max) = 0.00 kNm @ x = 0.23 m

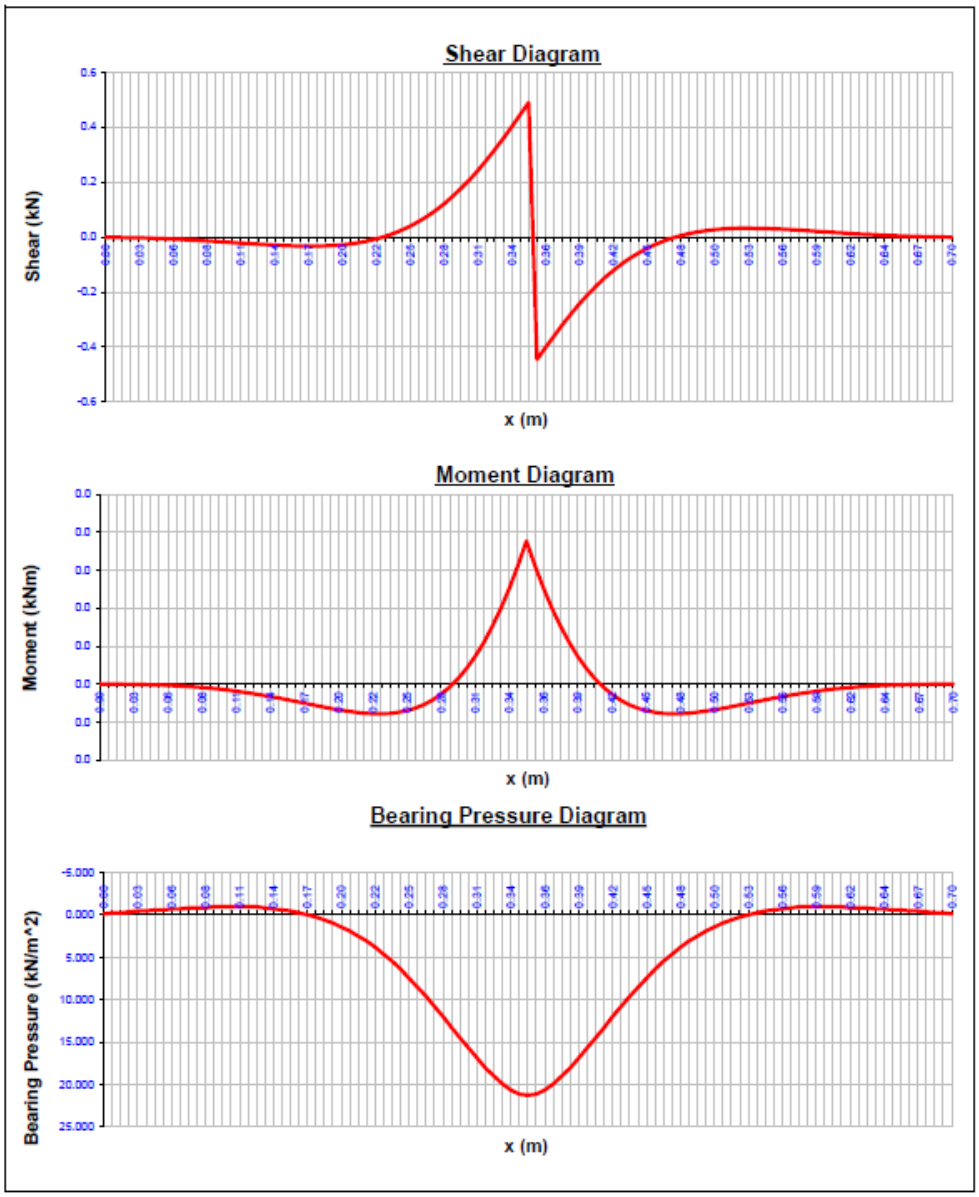
Max. Deflection and Location:

Δ(max) = 0.00018 m @ x = 0.35 m

Max. Soil Pressure and Location:

Q(max) = 21.227 kN/m^2 @X = 0.35 m

"BOEF.xls" Program
Version 1.2



Pelat dengan tiang 10 cm (kering)

"BOEF.xls" Program
Version 1.2

BEAM ON ELASTIC FOUNDATION ANALYSIS

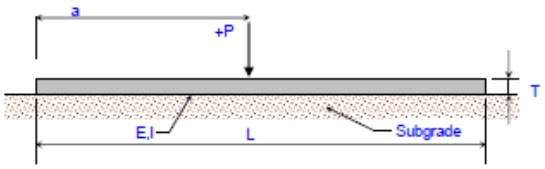
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip
of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55809	kN/m2
Subgrade, K =	1929824.561	kN/m3
Inertia, I =	4.67E-07	m^4



Nomenclature

Beam Loadings:

Full Uniform:

w = 0.0000 kN/m

Distributed:	Start b (m)	Start wb (kN/m)	End e (m)	End we (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Point Loads:	a (m)	P (kN)
#1:	0.3500	0.49
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Moments:	c (ft.)	M (ft-k/ps)
#1:		
#2:		
#3:		
#4:		

Results:

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite long

β = 16.070 β = ((K*W)/(4*E*144*I))^(1/
β*L = 11.25 β*L = Flexibility Factor

Beam is flexible

Max. Shears and Locations:

+V(max) = 0.25 kN @ x = 0.35
-V(max) = -0.25 kN @ x = 0.35

Max. Moments and Locations:

+M(max) = 0.01 kNm @ x = 0.35
-M(max) = 0.00 kNm @ x = 0.25

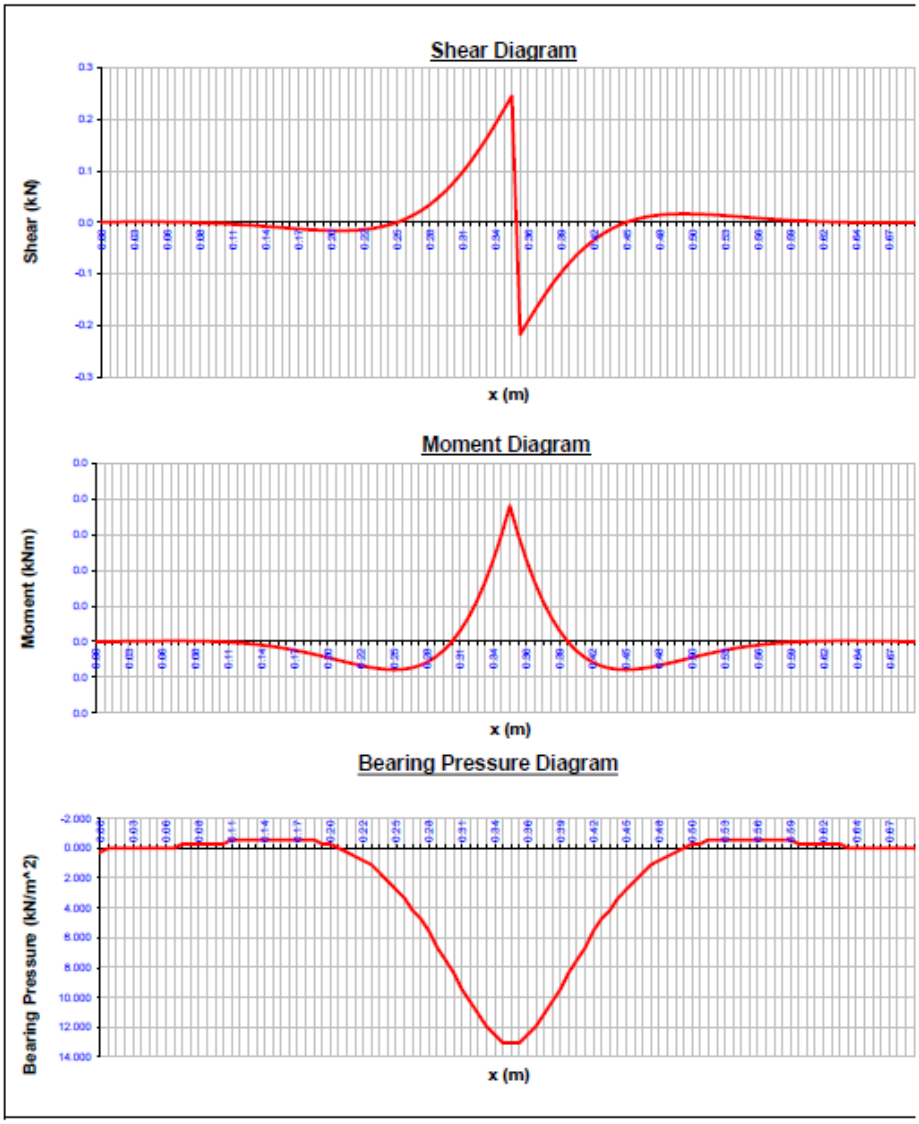
Max. Deflection and Location:

Δ(max) = 0.000047 m @ x = 0.34

Max. Soil Pressure and Location:

Q(max) = 13.061 kN/m^2 @X = 0.34

"BOEF.xls" Program
Version 1.2



Pelat dengan tiang 20 cm (kering)

"BOEF.xls" Program
Version 1.2

BEAM ON ELASTIC FOUNDATION ANALYSIS

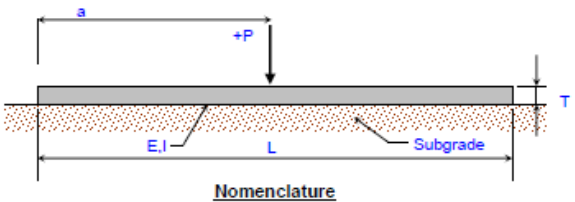
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip
of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55809	Mpa
Subgrade, K =	1101321.586	kN/m3
Inertia, I =	4.67E-07	m^4



Nomenclature

Beam Loadings:

Full Uniform:
w = 0.0000 kN/m

Distributed:	Start b (m)	Start wb (kN/m)	End e (m)	End we (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Point Loads:	a (m)	P (kN)
#1:	0.3500	0.49
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Moments:	c (ft.)	M (ft-kips)
#1:		
#2:		
#3:		
#4:		

Results:

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite lon

β = 13.967 β = ((K*W)/(4*E*144*I))^(1/
β*L = 9.78 β*L = Flexibility Factor

Beam is flexible

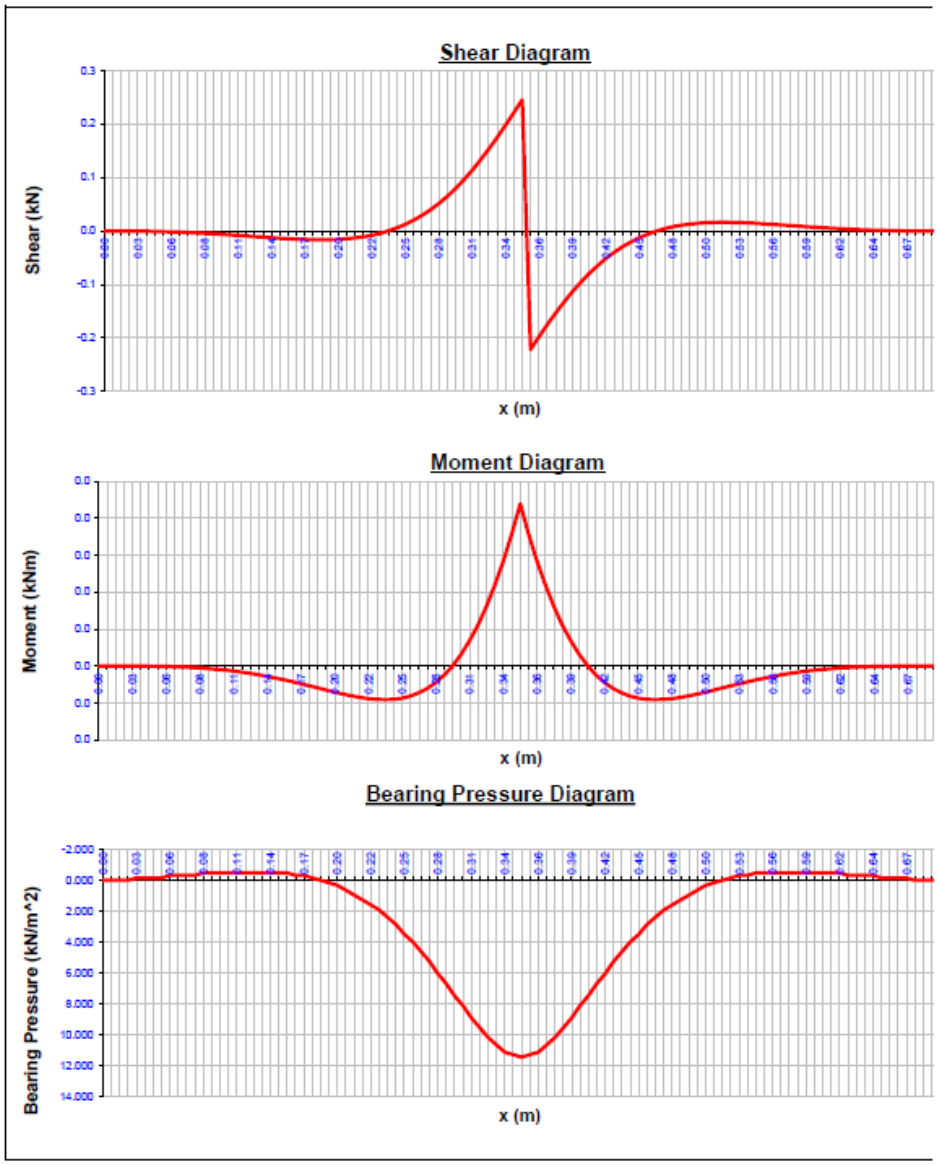
Max. Shears and Locations:
+V(max) = 0.25 kN @ x = 0.35
-V(max) = -0.25 kN @ x = 0.35

Max. Moments and Locations:
+M(max) = 0.01 kNm @ x = 0.35
-M(max) = 0.00 kNm @ x = 0.24

Max. Deflection and Location:
Δ(max) = 0.000072 m @ x = 0.35

Max. Soil Pressure and Location:
Q(max) = 11.419 kN/m^2 @X = 0.35

"BOEF.xls" Program
Version 1.2



Lampiran 4. Analisa *beam on elastic foundation* (basah)

Pelat tanpa tiang (basah)

"BOEF.xls" Program
Version 1.2

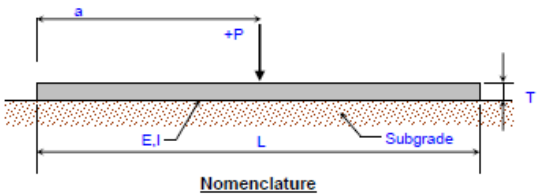
BEAM ON ELASTIC FOUNDATION ANALYSIS
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip
of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55809	kN/m2
Subgrade, K =	32525.36038	kN/m3
Inertia, I =	4.67E-07	m^4



Nomenclature

Beam Loadings:

Full Uniform:
w = 0.0000 kN/m

Distributed:	Start b (m)	Start wb (kN/m)	End e (m)	End we (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Point Loads:	a (m)	P (kN)
#1:	0.3500	0.49
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Moments:	c (ft.)	M (ft-kips)
#1:		
#2:		
#3:		
#4:		

Results:

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite long

β = 5.790 β = ((K*W)/(4*E*144*I))^(1/4)
β*L = 4.05 β*L = Flexibility Factor

Beam is flexible

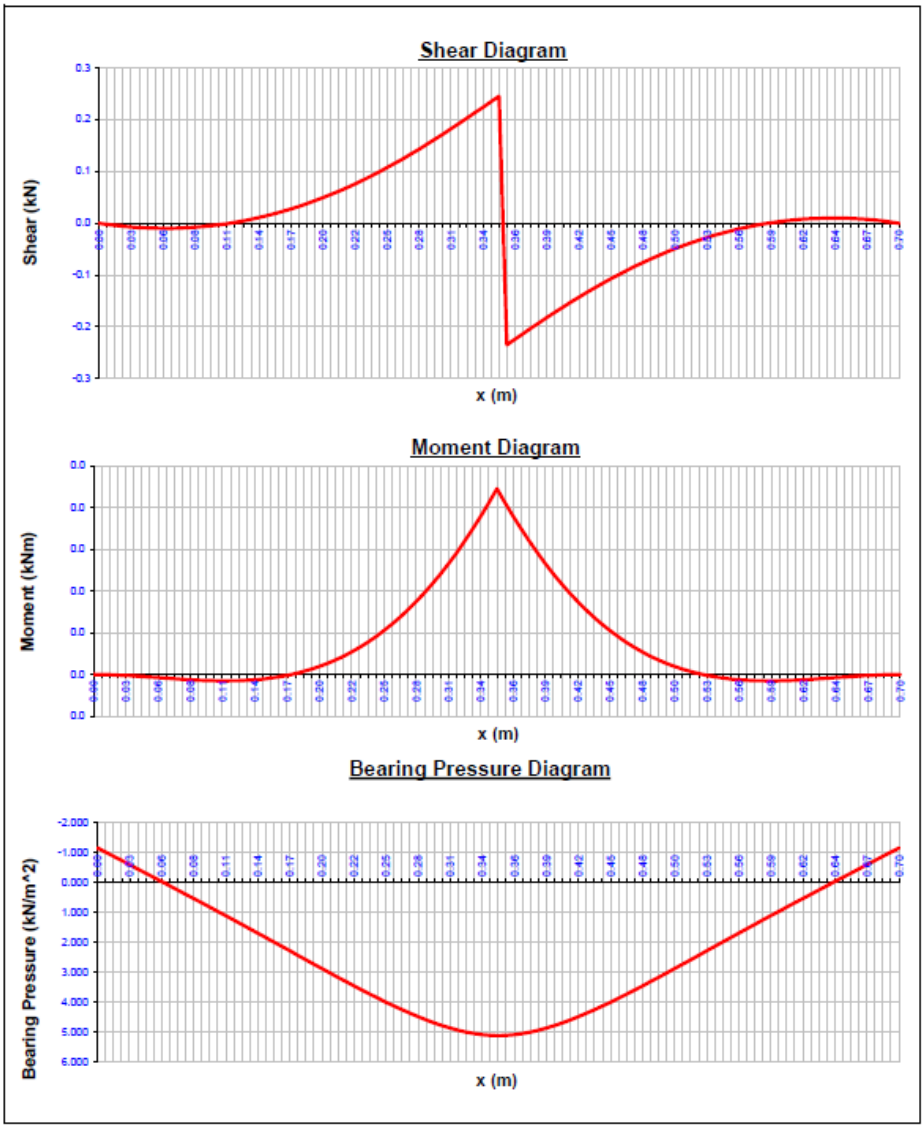
Max. Shears and Locations:
+V(max) = 0.25 kN @ x = 0.35 m
-V(max) = -0.25 kN @ x = 0.35 m

Max. Moments and Locations:
+M(max) = 0.02 kNm @ x = 0.35 m
-M(max) = 0.00 kNm @ x = 0.11 m

Max. Deflection and Location:
Δ(max) = 0.00109 m @ x = 0.35 m

Max. Soil Pressure and Location:
Q(max) = 5.105 kN/m^2 @X = 0.35 m

"BOEF.xls" Program
Version 1.2



Pelat dengan tiang 10 cm (basah)

"BOEF.xls" Program
Version 1.2

BEAM ON ELASTIC FOUNDATION ANALYSIS

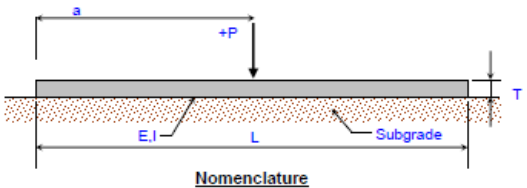
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip
of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55,809	kN/m2
Subgrade, K =	212202.381	kN/m3
Inertia, I =	2.00E-07	m^4



Nomenclature

Beam Loadings:

Full Uniform:

w = 0.0000 kN/m

Results:

Distributed:	Start b (m)	Wb (kN/m)	End e (m)	We (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite long

β = 11.437 β = ((K*W)/(4*E*144*I))^(1/4)
β*L = 8.01 β*L = Flexibility Factor

Beam is flexible

Point Loads:	a (m)	P (kN)
#1:	0.3500	1.86
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Max. Shears and Locations:

+V(max) = 0.93 kN @ x = 0.35 m
-V(max) = -0.93 kN @ x = 0.35 m

Max. Moments and Locations:

+M(max) = 0.04 kNm @ x = 0.35 m
-M(max) = -0.01 kNm @ x = 0.21 m

Max. Deflection and Location:

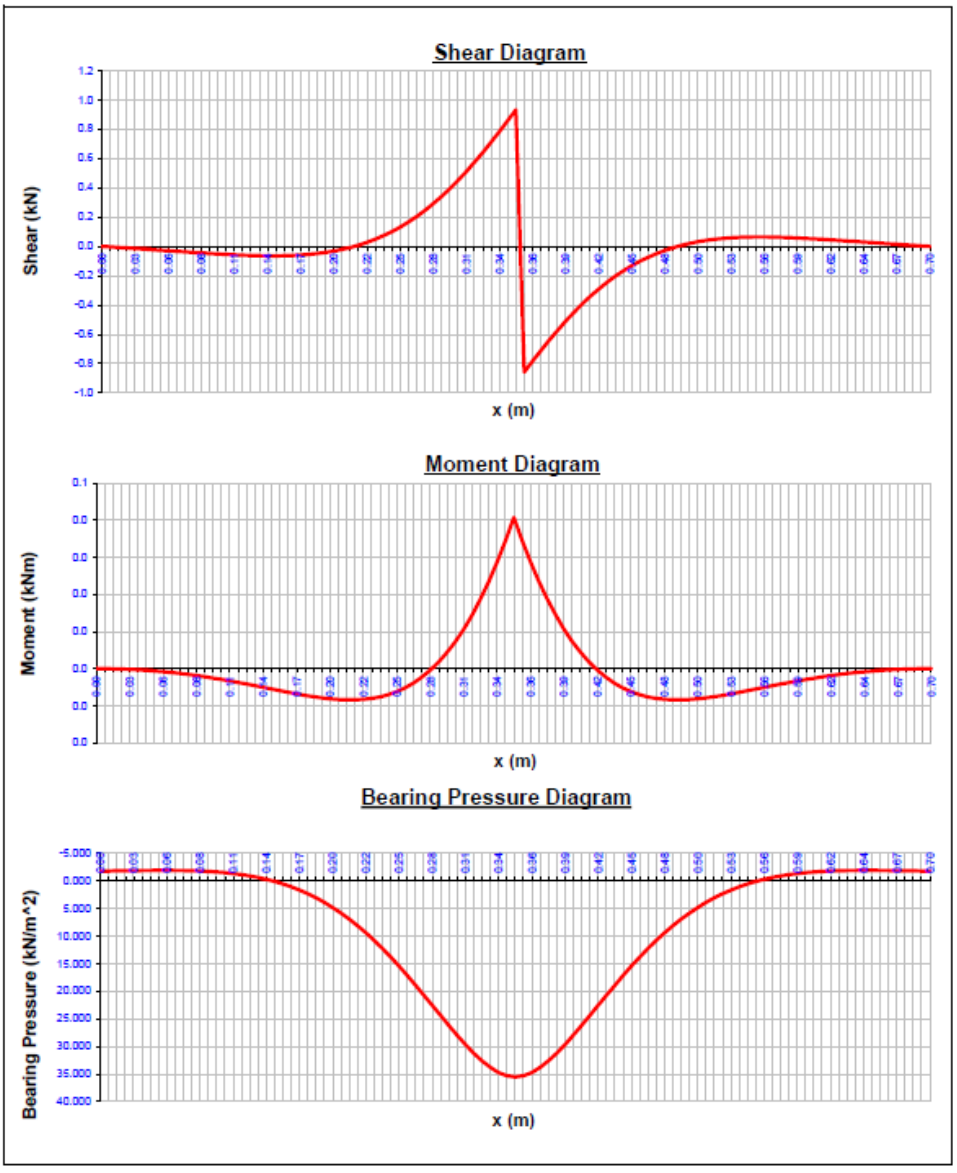
Δ(max) = 0.00116 m @ x = 0.35 m

Moments:	c (ft.)	M (ft-kips)
#1:		
#2:		
#3:		
#4:		

Max. Soil Pressure and Location:

Q(max) = 35.538 kN/m^2 @X = 0.35 m

"BOEF.xls" Program
Version 1.2



Pelat dengan tiang 10 cm (basah)

"BOEF.xls" Program
Version 1.2

BEAM ON ELASTIC FOUNDATION ANALYSIS

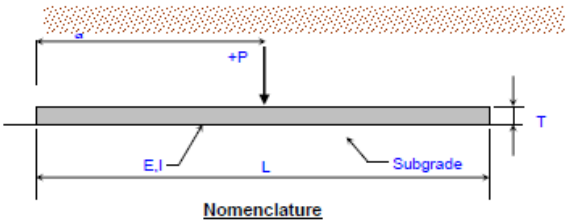
For Soil Supported Beam, Combined Footing, Slab Strip or Mat Strip
of Assumed Finite Length with Both Ends Free

Job Name:		Subject:			
Job Number:		Originator:		Checker:	

Input Data:

Beam Data:

Length, L =	0.7000	m
Width, W =	0.3000	m
Thickness, T =	0.0200	m
Modulus, E =	55809	kN/m2
Subgrade, K =	665902.1407	kN/m3
Inertia, I =	4.67E-07	m^4



Beam Loadings:

Nomenclature

Full Uniform:
w = 0.0000 kN/m

Results:

Distributed:	Start b (m)	Wb (kN/m)	End e (m)	We (kN/m)
#1:				
#2:				
#3:				
#4:				
#5:				
#6:				

Beam Flexiblity Criteria:

for β*L <= π/4	beam is rigid
for π/4 < β*L < π	beam is semi-rigid
for β*L >= π	beam is flexible
for β*L >= 6	beam is semi-infinite long

β = 12.316 β = ((K*W)/(4*E*144*I))^(1/4)
β*L = 8.62 β*L = Flexibility Factor

Beam is flexible

Point Loads:	a (m)	P (kN)
#1:	0.3500	0.49
#2:		
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		

Max. Shears and Locations:

+V(max) = 0.25 kN @ x = 0.35 m
-V(max) = -0.25 kN @ x = 0.35 m

Moments:	c (ft.)	M (ft-kips)
#1:		
#2:		
#3:		
#4:		

Max. Moments and Locations:

+M(max) = 0.01 kNm @ x = 0.35 m
-M(max) = 0.00 kNm @ x = 0.22 m

Max. Deflection and Location:

Δ(max) = 0.00011 m @ x = 0.35 m

Max. Soil Pressure and Location:

Q(max) = 10.068 kN/m^2 @X = 0.35 m

"BOEF.xls" Program
Version 1.2