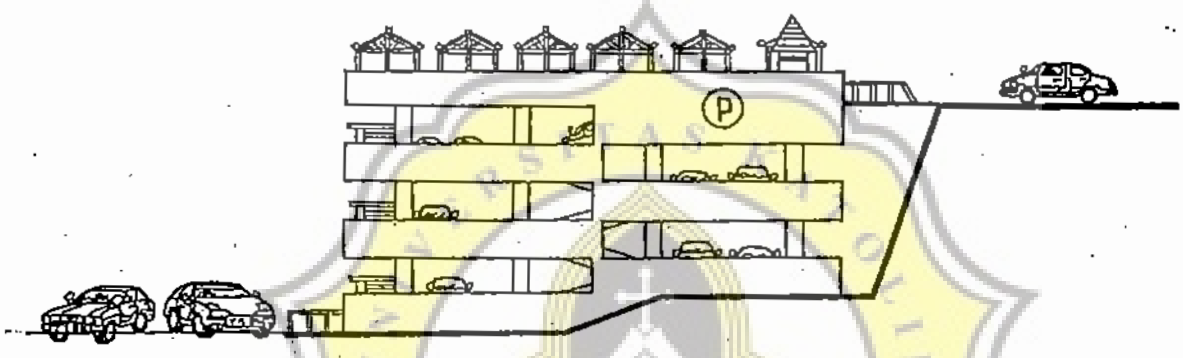
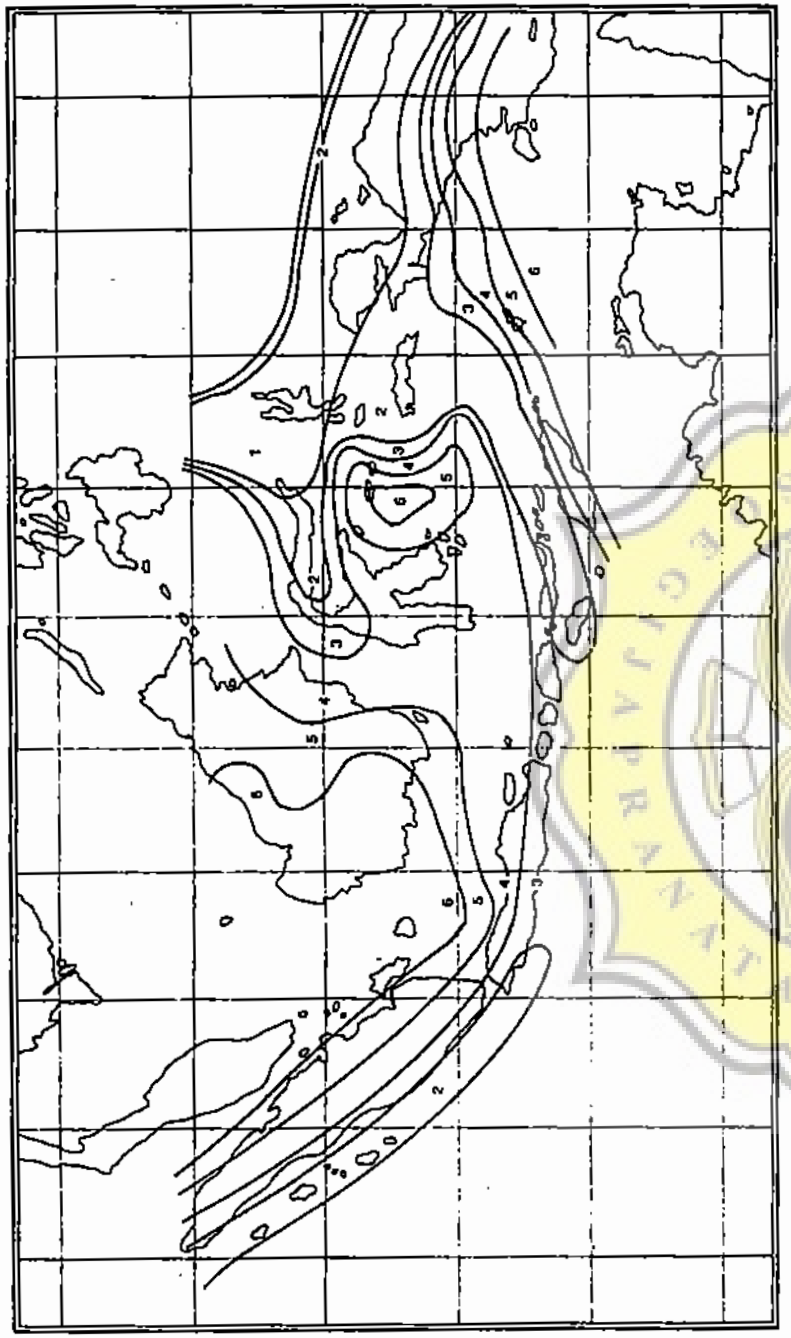
LAMPIRAN



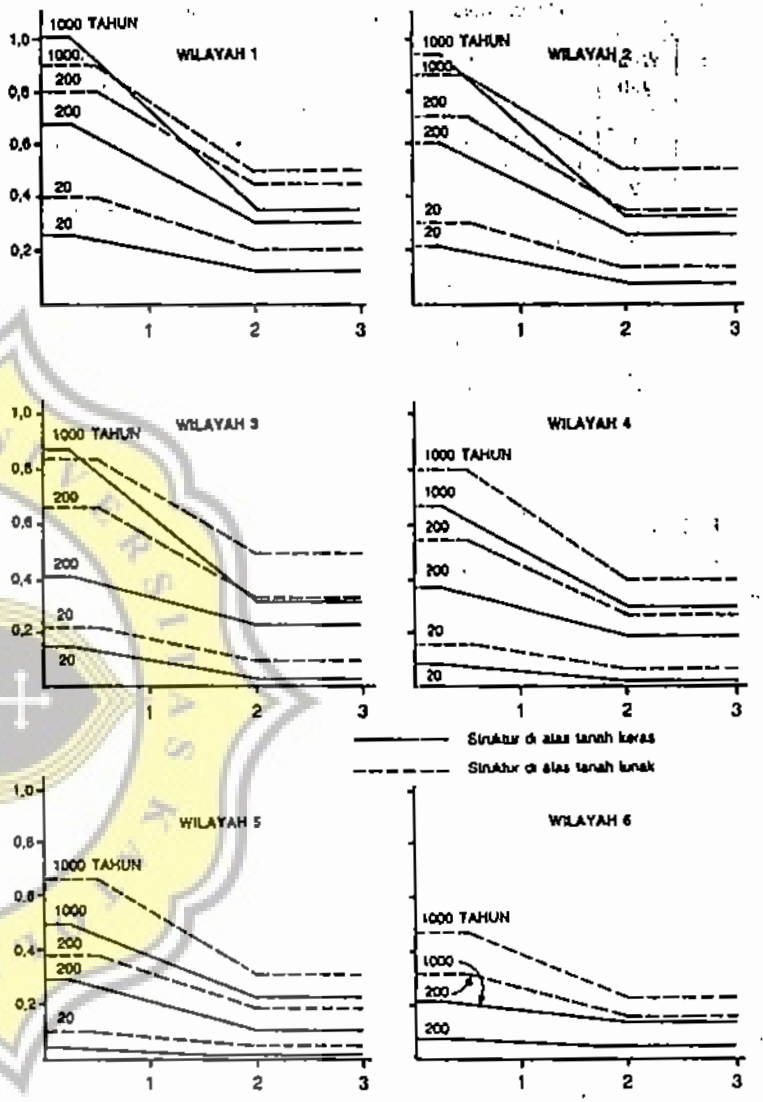
PERENCANAAN GEDUNG PARKIR

UNIVERSITAS KATOLIK SOEGIJAPRANATA

SEMARANG



Gambar 2-4 Peta wilayah gempa di Indonesia [12].



Gambar 2-5 Respon percepatan struktur [12].

5.1.d MUTU BETON f '$_c$ 30 ø = 0,8

M_u/bd^2	f_y = 240 MPa		f_y = 400 MPa		c/d	z/d
	ρ	a_u	ρ	a_u		
100	0,0005	0,192	0,0003	0,319	0,006	0,998
200	0,0010	0,191	0,0006	0,318	0,012	0,995
300	0,0016	0,191	0,0009	0,318	0,017	0,993
400	0,0021	0,190	0,0013	0,317	0,023	0,990
500	0,0026	0,190	0,0016	0,316	0,029	0,988
600	0,0032	0,189	0,0019	0,315	0,035	0,985
700	0,0037	0,189	0,0022	0,314	0,041	0,983
800	0,0043	0,188	0,0026	0,314	0,047	0,980
900	0,0048	0,188	0,0029	0,313	0,053	0,977
1000	0,0053	0,187	0,0032	0,312	0,059	0,975
1100	0,0059	0,187	0,0035	0,311	0,065	0,972
1200	0,0064	0,186	0,0039	0,310	0,071	0,970
1300	0,0070	0,186	0,0042	0,309	0,078	0,967
1400	0,0076	0,185	0,0045	0,309	0,084	0,964
1500	0,0081	0,185	0,0049	0,308	0,090	0,962
1600	0,0087	0,184	0,0052	0,307	0,096	0,959
1700	0,0093	0,184	0,0056	0,306	0,103	0,956
1800	0,0098	0,183	0,0059	0,305	0,109	0,954
1900	0,0104	0,183	0,0062	0,304	0,115	0,951
2000	0,0110	0,182	0,0066	0,303	0,122	0,948
2200	0,0122	0,181	0,0073	0,302	0,135	0,943
2400	0,0133	0,180	0,0080	0,300	0,148	0,937
2600	0,0145	0,179	0,0087	0,298	0,161	0,932
2800	0,0158	0,178	0,0095	0,296	0,174	0,926
3000	0,0170	0,177	0,0102	0,294	0,188	0,920
3200	0,0182	0,176	0,0109	0,293	0,202	0,914
3400	0,0195	0,174	0,0117	0,291	0,216	0,908
3600	0,0208	0,173	0,0125	0,289	0,230	0,902
3800	0,0221	0,172	0,0133	0,287	0,245	0,896
4000	0,0234	0,171	0,0140	0,285	0,259	0,890
4200	0,0248	0,170	0,0149	0,283	0,274	0,883
4400	0,0261	0,168	0,0157	0,281	0,289	0,877
4600	0,0275	0,167	0,0165	0,279	0,305	0,870
4800	0,0289	0,166	0,0174	0,276	0,320	0,864
5000	0,0304	0,165	0,0182	0,274	0,336	0,857
5200	0,0319	0,163	0,0191	0,272	0,253	0,850
5400	0,0334	0,162	0,0200	0,270	0,369	0,843
5600	0,0349	0,160	0,0209	0,267	0,386	0,836
5800	0,0365	0,159	0,0219	0,265	0,404	0,828
6000	0,0381	0,158	0,0228	0,263	0,422	0,821
6200	0,0397	0,156	0,0238	0,260	0,440	0,813
6400	0,0414	0,155	0,0248	0,258	0,458	0,805
6600	0,0431	0,153			0,478	0,797
6800	0,0449	0,151			0,497	0,789
7000	0,0467	0,150			0,518	0,780
7200	0,0486	0,148			0,538	0,771

5.1.i MUTU BETON f'c 30 ø = 1

M/bd²	fy = 240 MPa		fy = 400 MPa		c/d	z/d
	ρ	ρ_b	ρ	ρ_b		
100	0,0004	0,240	0,0003	0,399	0,005	0,998
200	0,0008	0,239	0,0005	0,398	0,009	0,996
300	0,0013	0,239	0,0008	0,398	0,014	0,994
400	0,0017	0,238	0,0010	0,397	0,019	0,992
500	0,0021	0,238	0,0013	0,396	0,023	0,990
600	0,0025	0,237	0,0015	0,395	0,028	0,988
700	0,0030	0,237	0,0018	0,394	0,033	0,986
800	0,0034	0,236	0,0020	0,394	0,038	0,984
900	0,0038	0,236	0,0023	0,393	0,042	0,982
1000	0,0043	0,235	0,0026	0,392	0,047	0,980
1100	0,0047	0,235	0,0028	0,391	0,052	0,978
1200	0,0051	0,234	0,0031	0,390	0,057	0,976
1300	0,0056	0,234	0,0033	0,390	0,062	0,974
1400	0,0060	0,233	0,0036	0,389	0,066	0,972
1500	0,0064	0,233	0,0039	0,388	0,071	0,970
1600	0,0069	0,232	0,0041	0,387	0,076	0,968
1700	0,0073	0,232	0,0044	0,386	0,081	0,965
1800	0,0078	0,231	0,0047	0,385	0,086	0,963
1900	0,0082	0,231	0,0049	0,384	0,091	0,961
2000	0,0087	0,230	0,0052	0,384	0,096	0,959
2200	0,0096	0,229	0,0058	0,382	0,106	0,955
2400	0,0105	0,228	0,0063	0,380	0,116	0,950
2600	0,0115	0,227	0,0069	0,378	0,127	0,946
2800	0,0124	0,226	0,0074	0,377	0,137	0,942
3000	0,0133	0,225	0,0080	0,375	0,148	0,937
3200	0,0143	0,224	0,0086	0,373	0,158	0,933
3400	0,0153	0,223	0,0092	0,371	0,169	0,928
3600	0,0162	0,222	0,0097	0,369	0,180	0,924
3800	0,0172	0,221	0,0103	0,368	0,191	0,919
4000	0,0182	0,219	0,0109	0,366	0,202	0,914
4200	0,0192	0,218	0,0115	0,364	0,213	0,909
4400	0,0203	0,217	0,0122	0,362	0,224	0,905
4600	0,0213	0,216	0,0128	0,360	0,236	0,900
4800	0,0224	0,215	0,0134	0,358	0,347	0,895
5000	0,0234	0,214	0,0140	0,356	0,259	0,890
5200	0,0245	0,212	0,0147	0,354	0,271	0,885
5400	0,0256	0,211	0,0153	0,352	0,383	0,880
5600	0,0267	0,210	0,0160	0,350	0,295	0,874
5800	0,0278	0,209	0,0167	0,348	0,308	0,869
6000	0,0289	0,207	0,0174	0,346	0,320	0,864
6200	0,0301	0,206	0,0181	0,343	0,333	0,858
6400	0,0313	0,205	0,0188	0,341	0,346	0,853
6600	0,0325	0,203	0,0195	0,339	0,359	0,847
6800	0,0337	0,202	0,0202	0,337	0,337	0,842
7000	0,0349	0,201	0,0209	0,334	0,386	0,836
7200	0,0361	0,199	0,0217	0,332	0,400	0,830
7400	0,0374	0,198	0,0225	0,330	0,414	0,824
7600	0,0387	0,196	0,0232	0,327	0,429	0,818
7800	0,0400	0,195	0,0240	0,325	0,443	0,812
8000	0,0414	0,193	0,0248	0,322	0,458	0,805
8200	0,0428	0,192			0,474	0,799
8400	0,0442	0,190			0,489	0,792
8600	0,0456	0,188			0,505	0,785
8800	0,0471	0,187			0,522	0,778
9000	0,0486	0,185			0,538	0,771

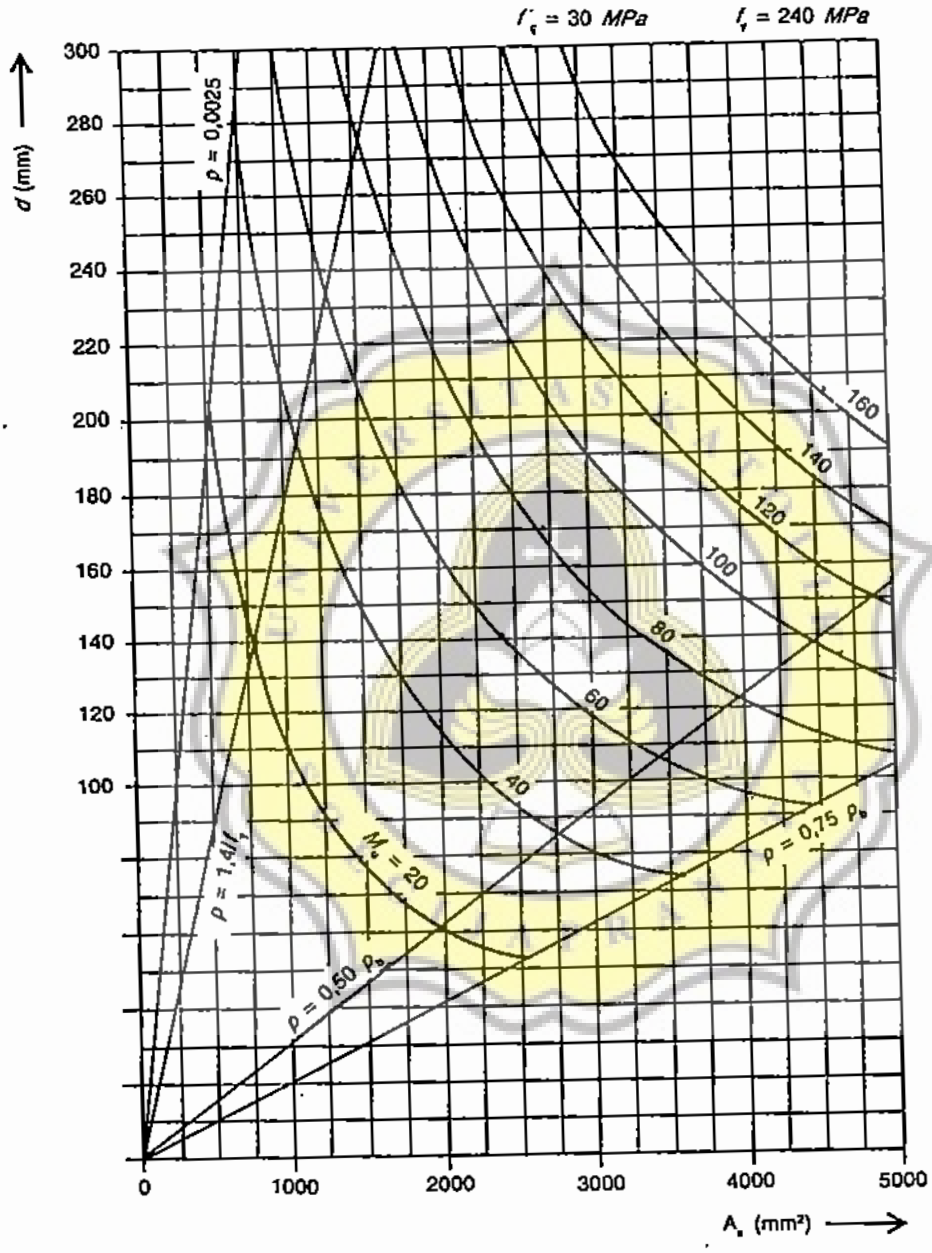
5.3.d MUTU BETON f '$_c$ 30 dengan tulangan tekan ø = 0,8

Diketahui ρ tulangan tarik, ρ tulangan tekan = 0,5 . ρ tulangan tarik						
M_u/bd^2	f_y = 240 MPa d'/d =			f_y = 400 MPa d'/d =		
	0,10	0,15	0,20	0,10	0,15	0,20
200	0,0011	0,0011	0,0012	0,0007	0,0007	0,0007
400	0,0022	0,0023	0,0023	0,0013	0,0014	0,0014
600	0,0033	0,0034	0,0035	0,0020	0,0020	0,0021
800	0,0044	0,0045	0,0047	0,0026	0,0027	0,0028
1000	0,0055	0,0057	0,0058	0,0033	0,0034	0,0035
1200	0,0066	0,0068	0,0070	0,0040	0,0041	0,0042
1400	0,0078	0,0080	0,0082	0,0046	0,0048	0,0049
1600	0,0089	0,0091	0,0094	0,0053	0,0055	0,0056
1800	0,0100	0,0103	0,0106	0,0060	0,0062	0,0063
2000	0,0111	0,0114	0,0118	0,0067	0,0069	0,0071
2200	0,0122	0,0126	0,0130	0,0073	0,0076	0,0078
2400	0,0134	0,0138	0,0142	0,0080	0,0083	0,0085
2600	0,0145	0,0149	0,0154	0,0087	0,0090	0,0092
2800	0,0157	0,0161	0,0166	0,0094	0,0097	0,0099
3000	0,0168	0,0173	0,0178	0,0101	0,0104	0,0107
3200	0,0179	0,0185	0,0190	0,0108	0 0111	0,0114
3400	0,0191	0,0196	0,0202	0,0115	0,0118	0,0121
3600	0,0202	0,0208	0,0214	0,0121	0,0125	0,0129
3800	0,0214	0,0220	0,0227	0,0128	0,0132	0,0136
4000	0,0226	0,0232	0,0239	0,0135	0,0139	0,0143
4200	0,0237	0,0244	0,0251	0,0142	0,0146	0,0151
4400	0,0249	0,0256	0,0264	0,0149	0,0154	0,0158
4600	0,0261	0,0268	0,0276	0,0156	0,0161	0,0166
4800	0,0272	0,0280	0,0289	0,0163	0,0168	0,0173
5000	0,0284	0,0292	0,0301	0,0170	0,0175	0,0181
5200	0,0296	0,0305	0,0314	0,0178	0,0183	0,0188
5400	0,0308	0,0317	0,0326	0,0185	0,0190	0,0196
5600	0,0320	0,0329	0,0339	0,0192	0,0197	0,0203
5800	0,0332	0,0341	0,0352	0,0199	0,0205	0,0211
6000	0,0344	0,0354	0,0365	0,0206	0,0212	0,0219
6200	0,0356	0,0366	0,0377	0,0213	0,0220	0,0226
6400	0,0368	0,0379	0,0390	0,0221	0,0227	0,0234
6600	0,0380	0,0391	0,0403	0,0228	0,0235	0,0242
6800	0,0392	0,0404	0,0416	0,0235	0,0242	0,0250
7000	0,0404	0,0416	0,0429	0,0242	0,0250	0,0258
7200	0,0416	0,0429	0,0442	0,0250	0,0257	0,0265
7400	0,0428	0,0441	0,0455	0,0257	0,0265	0,0273
7600	0,0441	0,0454	0,0469	0,0264	0,0272	0,0281
7800	0,0453	0,0467	0,0482	0,0272	0,0280	0,0289
8000	0,0465	0,0480	0,0495	0,0279	0,0288	0,0297
8200	0,0478	0,0493	0,0508	0,0287	0,0296	0,0305

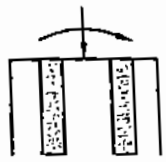
5.3.i MUTU BETON f'c 30 dengan tulangan tekan ø = 1

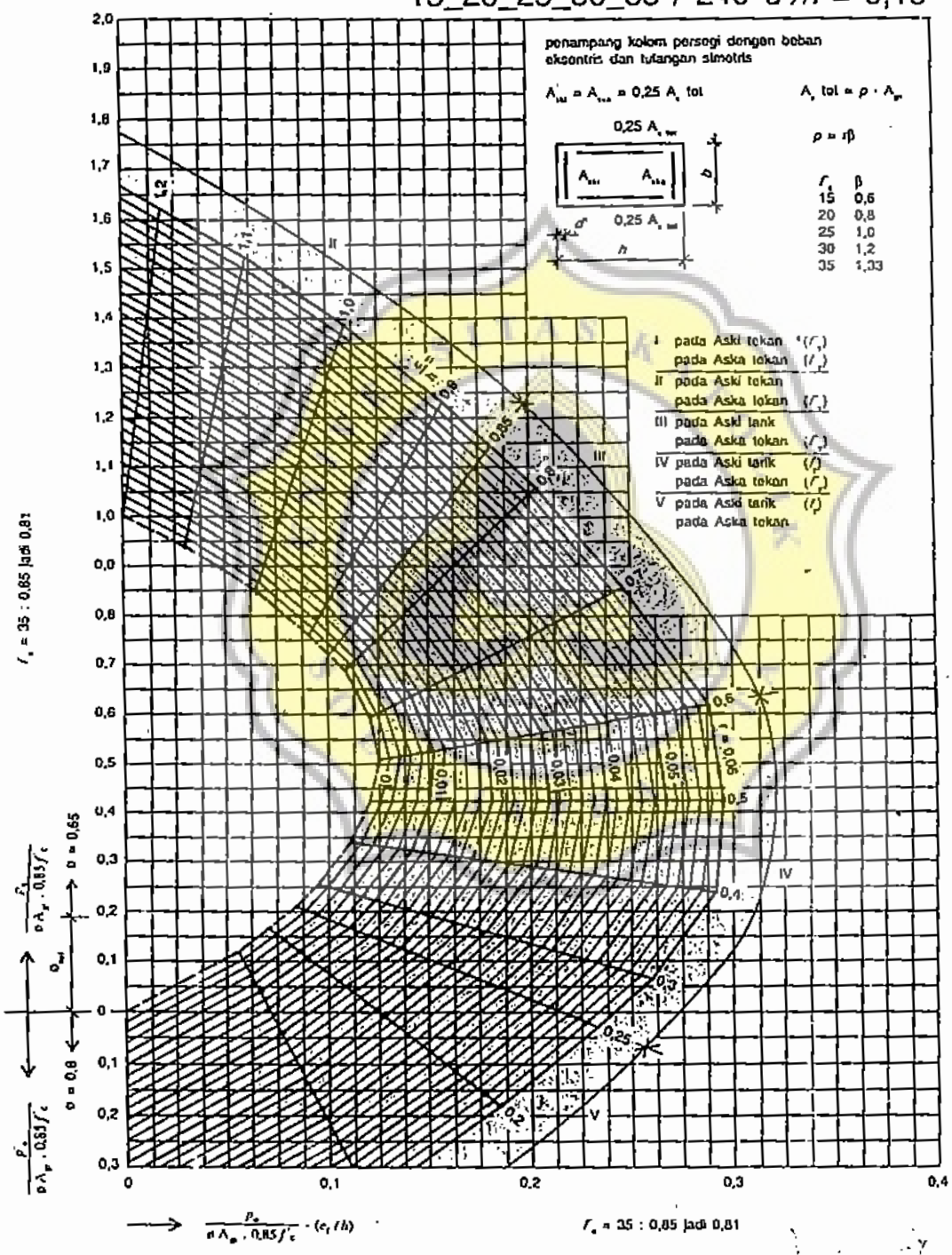
Diketahui ρ tulangan tarik, ρ tulangan tekan = 0,5 . ρ tulangan tarik

M_u/bd^2	f_y = 240 MPa d'/d =			f_y = 400 MPa d'/d =		
	0,10	0,15	0,20	0,10	0,15	0,20
200	0,0009	0,0009	0,0009	0,0005	0,0005	0,0006
400	0,0018	0,0018	0,0019	0,0011	0,0011	0,0011
600	0,0026	0,0027	0,0028	0,0016	0,0016	0,0017
800	0,0035	0,0036	0,0037	0,0021	0,0022	0,0022
1000	0,0044	0,0045	0,0047	0,0026	0,0027	0,0028
1200	0,0053	0,0054	0,0056	0,0032	0,0033	0,0034
1400	0,0062	0,0064	0,0065	0,0037	0,0038	0,0039
1600	0,0071	0,0073	0,0075	0,0042	0,0044	0,0045
1800	0,0080	0,0082	0,0084	0,0048	0,0049	0,0051
2000	0,0089	0,0091	0,0094	0,0053	0,0055	0,0056
2200	0,0098	0,0100	0,0103	0,0059	0,0060	0,0062
2400	0,0107	0,0110	0,0113	0,0064	0,0066	0,0068
2600	0,0116	0,0119	0,0122	0,0069	0,0071	0,0073
2800	0,0125	0,0128	0,0132	0,0075	0,0077	0,0079
3000	0,0134	0,0138	0,0142	0,0080	0,0083	0,0085
3200	0,0143	0,0147	0,0151	0,0086	0,0088	0,0091
3400	0,0152	0,0156	0,0161	0,0091	0,0094	0,0096
3600	0,0161	0,0166	0,0170	0,0097	0,0099	0,0102
3800	0,0170	0,0175	0,0180	0,0102	0,0105	0,0108
4000	0,0179	0,0185	0,0190	0,0108	0,0111	0,0114
4200	0,0189	0,0194	0,0200	0,0113	0,0116	0,0120
4400	0,0198	0,0203	0,0209	0,0119	0,0122	0,0126
4600	0,0207	0,0213	0,0219	0,0124	0,0128	0,0132
4800	0,0216	0,0223	0,0229	0,0130	0,0134	0,0137
5000	0,0226	0,0232	0,0239	0,0135	0,0139	0,0143
5200	0,0235	0,0242	0,0249	0,0141	0,0145	0,0149
5400	0,0244	0,0251	0,0259	0,0147	0,0151	0,0155
5600	0,0254	0,0261	0,0269	0,0152	0,0157	0,0161
5800	0,0263	0,0271	0,0279	0,0158	0,0162	0,0167
6000	0,0272	0,0280	0,0289	0,0163	0,0168	0,0173
6200	0,0282	0,0290	0,0299	0,0169	0,0174	0,0179
6400	0,0291	0,0300	0,0309	0,0175	0,0180	0,0185
6600	0,0301	0,0309	0,0319	0,0180	0,0186	0,0191
6800	0,0310	0,0319	0,0329	0,0186	0,0192	0,0197
7000	0,0320	0,0329	0,0339	0,0192	0,0197	0,0203
7200	0,0329	0,0339	0,0349	0,0198	0,0203	0,0210
7400	0,0339	0,0349	0,0359	0,0203	0,0209	0,0216
7600	0,0348	0,0359	0,0370	0,0209	0,0215	0,0222
7800	0,0358	0,0369	0,0380	0,0215	0,0221	0,0228
8000	0,0368	0,0379	0,0390	0,0221	0,0227	0,0234
8200	0,0377	0,0389	0,0401	0,0226	0,0233	0,0240
8400	0,0387	0,0399	0,0411	0,0232	0,0239	0,0247
8600	0,0397	0,0409	0,0421	0,0238	0,0245	0,0253
8800	0,0406	0,0419	0,0432	0,0244	0,0251	0,0259
9000	0,0416	0,0429	0,0442	0,0250	0,0257	0,0265
9200	0,0426	0,0439	0,0453	0,0256	0,0263	0,0272
9400	0,0436	0,0449	0,0463	0,0261	0,0269	0,0278
9600	0,0446	0,0459	0,0474	0,0267	0,0276	0,0284
9800	0,0456	0,0469	0,0484	0,0273	0,0282	0,0291
10000	0,0465	0,0480	0,0495	0,0279	0,0288	0,0297
10200	0,0475	0,0490	0,0506	0,0285	0,0294	0,0303
10400	0,0485	0,0500	0,0516	0,0291	0,0300	0,0310


f'c = 30 MPa
fy = 240 MPa
d (mm)
300
280
260
240
220
200
180
160
140
120
100
ρ = 0,0025
160
140
120
100
80
60
40
ρ = 1,4/fy
Mn = 20
ρ = 0,75 ρb
ρ = 0,50 ρb
0
1000
2000
3000
4000
5000
An (mm²)

Gambar 5.4.d



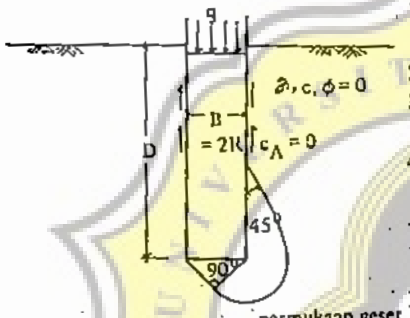

15_20_25_30_35 / 240 d'/h = 0,15
penampang kolom persegi dengan beban eksentris dan tulangan simetris
$A'_{tot} = A_{sss} = 0{,}25\ A_{s\ tot}$
$A_{s\ tot} = \rho \cdot A_g$
$\rho = r\beta$
f_c β
15 0,6
20 0,8
25 1,0
30 1,2
35 1,33
I pada Aski tekan (f_c)
pada Aska tekan (f_y)
II pada Aski tekan
pada Aska tekan (f_c)
III pada Aski tank
pada Aska tekan (f_y)
IV pada Aski tank (f_y)
pada Aska tekan (f_c)
V pada Aski tank (f_y)
pada Aska tekan
f_c = 35 : 0,85 jadi 0,81
$\frac{P_n}{\phi A_g \cdot 0{,}85 f'_c}$
$\frac{P_n}{\phi A_g \cdot 0{,}85 f'_c} \cdot (e_t / h)$

Gambar 6.1.e

Pondasi Dalam (Langsung) :

Pondasi dalam kita gunakan, bila lapisan tanah di dasar pondasi yang mampu mendukung beban yang dilimpahkan, terletak cukup dalam, atau dengan pertimbangan adanya penggerusan, galian dekat pondasi dikemudian hari.

*Daya dukung ijin tanah, (tanah cohesive & seragam).



Kondisi yang dipenuhi :

1. Tanah seragam, minimum sampai kedalaman D dibawah dasar pondasi.
2. Dasar pondasi adalah kasar.
3. Adhesi antara sisi vertikal pondasi dan tanah diabaikan.
4. Beban vertikal sentris.

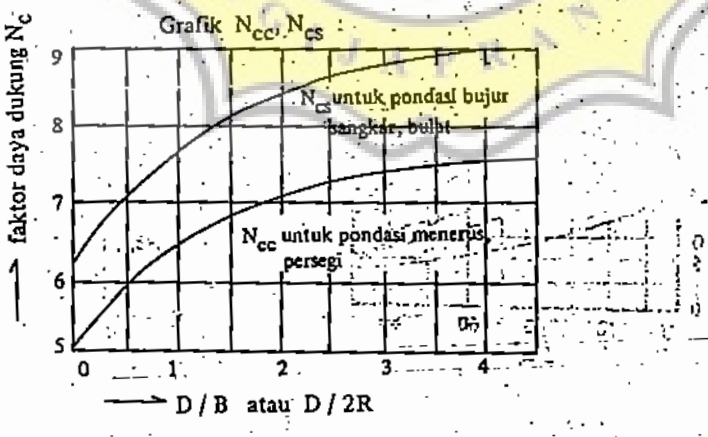
– Pondasi menerus :
$q_{ult} = c.N_{cc} + \partial . D$

– Pondasi bujur sangkar :
$q_{ult} = c.N_{cs} + \partial . D$

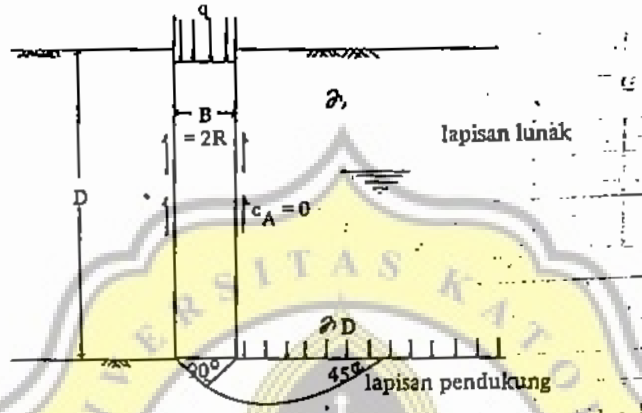
– Pondasi bulat : R = B/2
$q_{ult} = c.N_{cs} + \partial . D$

– Pondasi persegi :
$q_{ult} = c.N_{cr} + \partial . D$

$N_{cr} = N_{cc}[1+0,2(B/L)]$



* Daya dukung ijin tanah,
(tanah cohesive & tanah di-sisi vertikal adalah lapisan lunak)



Kondisi yang dipenuhi :

Seperti pada tanah cohesive & seragam, hanya disini kekuatan dari lapisan lunak di abaikan .

- Pondasi menerus :

  $q_{ult} = c \cdot N_c + \partial \cdot D$.

- Pondasi bujur sangkar, bulat :

  $q_{ult} = 1{,}3 \cdot c.N_c + \partial.D$.

- Pondasi persegi :

  $q_{ult} = c \cdot N_c [\, 1 + 0{,}3\ (B/L)\,] + \partial.D$.

  Nilai faktor N_c , lihat grafik N_c , N_q , N_∂ .

LAPORAN PENELITIAN TANAH

DI LOKASI GEDUNG UNIT B & C

HENRICUS CONSTANT

UNIKA SOEGIJAPRANATA

SEMARANG

LABORATORIUM MEKANIKA TANAH
UNIVERSITAS KATOLIK SOEGIJAPRANATA
JL. Pawiyatan Luhur IV / 1 Bendan Duwur, Semarang - 50234

JANUARI - 1997

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UNIVERSITAS KATOLIK SOEGIJAPRANATA
Jl. Pawiyatan Luhur IV / 1 Bendan Dhuwur Semarang - 50234
Telp. (024) 316142 - 441555 (Hunting)
Fax. (024) 415429 E-Mail : unika@semarang.wasantara.net.id. Po. Box. 8033/SM
Badan Hukum : Yayasan Sandjojo

PROYEK GEDUNG HENRICUS CONSTANT
UNIKA SOEGIJAPRANATA - SEMARANG

Lingkup Penelitian

- Sondir kapasitas2.5 ton sebanyak 7 titik (gambar terlampir)
- Bor dalam sebanyak 2 titik bor

Rekomendasi

Daya Dukung Pondasi Sumuran

Dipakai Rumus Empiris dari *Reese* and *O Neil* :

$$q_c = 0{,}6\ \gamma r\ N_{60} < 4500 \text{ kpa}$$

$$= 0{,}6.100.60$$

$$= 3600 \text{ kpa}$$

Bila Ø sumuran > 50 in di reduksi dengan persamaan

$$q_{er}' = 4{,}17 \cdot \frac{Br}{Bb} \cdot q_c'$$

$$= 4{,}17 \cdot \frac{0{,}3}{3} \cdot$$

$$= 0{,}417 .3600$$

$$= 1500 \text{ kpa}$$

Dengan sf =2 $\rightarrow q_{er}' = 750$ kpa

Daya dukung tanah untuk pondasi sumuran dapat dipakai tidak lebih dari 7,5 kg/cm2, untuk lapisan tanah dengan SPT >60 pukulan.

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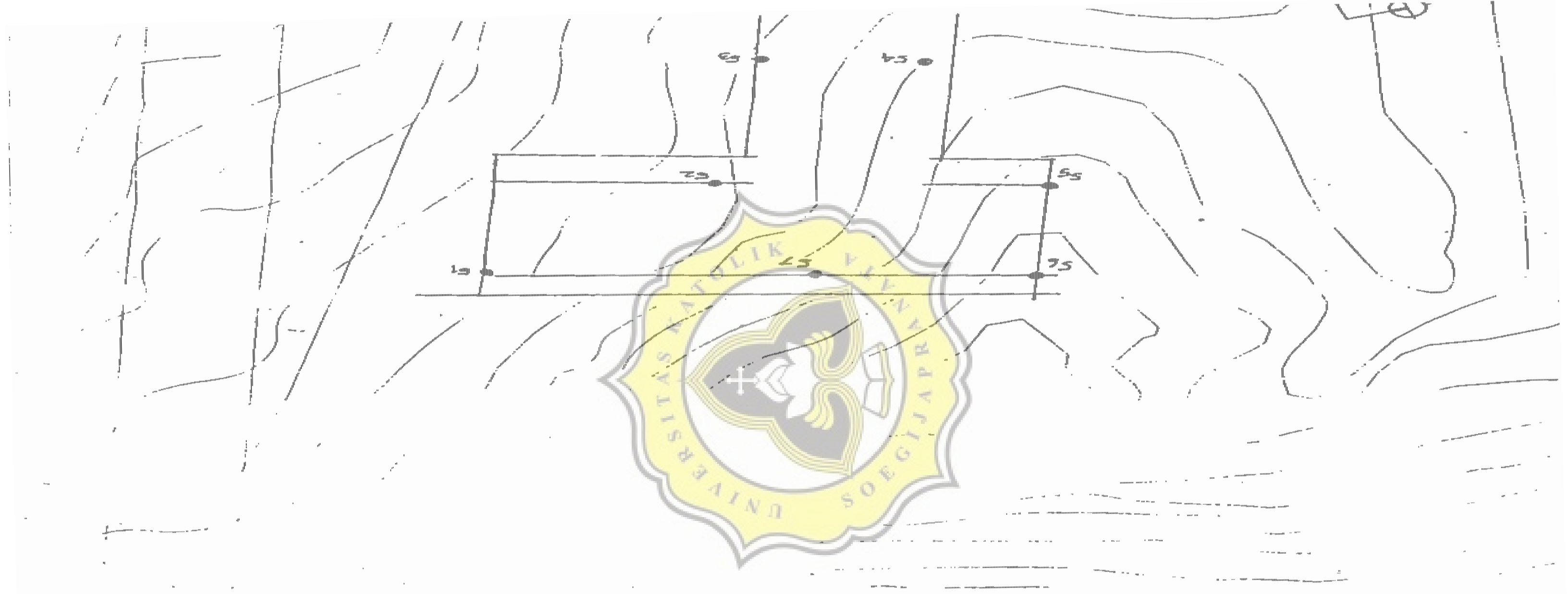
Penutup

Demikian laporan kami buat atas kepercayaan yang diberikan, kami ucapkan terima kasih .

Semarang, 20 Februari 1997

Ka. Lab. Mektan

(Ir. David Widianto, MT)



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Jl. Pawiyatan Luhur IV/1 Bendan Duwur Semarang - 50234
Telp. (024) 316142 - 441555 (hunting)
Fax. (024) 415429 E-Mail : soepra14@rad.net.id Po. Box. 8033/SM
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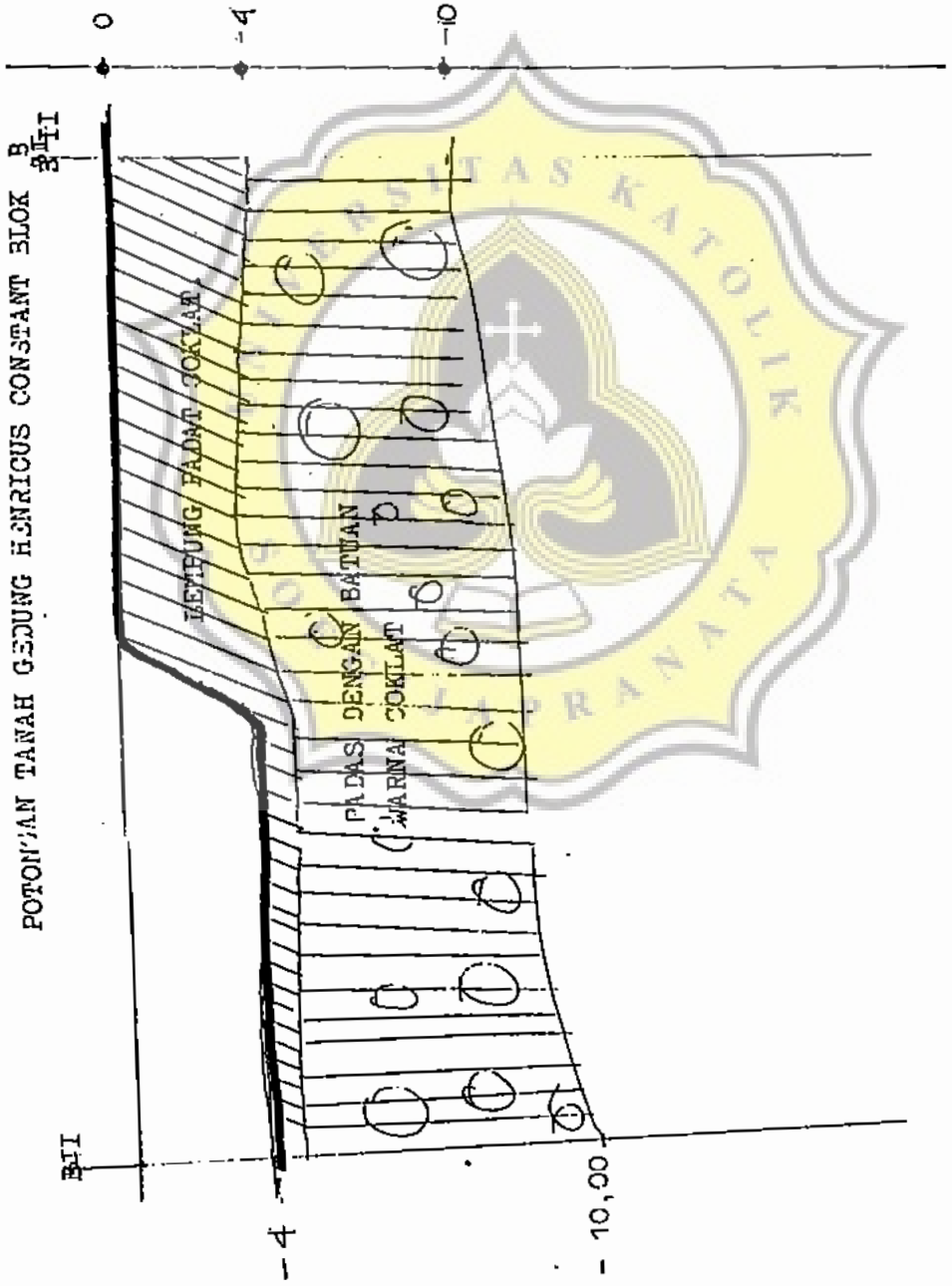


LAB MEKTAN UNIKA SOEGIJAPRANATA

PROJECT : HENRICUS CONSTAN
CLIENT : UNIKA
LOCATION : PAWIYATAN LUHUR IV/1 - SEMARANG
COORD NEZ : (0.000, 0.000, 0.000)
Job No. : 1

Depth : 10.000
Start date : 10/01/97
End date : 12/01/97
Core Dia : 5
Casing Dia : 7.2
Driller : unika
Logged by : andhi cs

BORELOG

HOLE: DB.001

Water: -0.000

Depth (m)	Soil/Rock Description
0 – 1.5	Padas (CR) Padas Warna Coklat
1.5 – 3.5	Batuan (SS) Batuan Dan Pasir Warna Coklat
3.5 – 5	Padas Batuan (RS) Padas Dengan Batuan

US kpa: 16.50 (at approx. -5.00)
PP kpa: 9.12 (at approx. -6.50)

SPT Test

Elev (m)	N-Blows			N
-2.00	0	0	0	48
-4.00	0	0	0	50
-6.00	0	0	0	60
-8.00	0	0	0	> 60
-10.00	0	0	0	> 60

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
Elev (m): 0.00, -2.00, -4.00, -6.00, -8.00, -10.00, -12.00, -14.00, -16.00, -18.00, -20.00
SPT chart scale: 20, 40

[illegible] to 10% Trace
[illegible] Some
[illegible] Adjective
[illegible] to 50% And

UDS - Shelby Tube
UDS - [illegible]
UDS - Pitcher

SPT Sample
SPT Test
Disturbed Sample

LAB MEKTAN UNIKA SOEGIJAPRANATA

PROJECT : HENRICUS CONSTAN
CLIENT : UNIKA
LOCATION : PAWIYATAN LUHUR IV/1 - SEMARANG
COORD NEZ : (0.000, 0.000, 0.000)
Job No. : 2

Depth : 10.000
Start date : 13/01/97
End date : 15/01/97
Core Dia : 6
Casing Dia : 7.2
Driller : unika
Logged by : andhi cs

BORELOG

HOLE: DB.002

Water	Depth (m)	Core	SOIL/ROCK DESCRIPTION	Elev (m)	U S kpa	p p kpa	Remark	SPT Test N-Blous			N	20 40
-0.000	0		Lempung (S) Lempung Padat Warna Coklat	0.00								
	2		Padas Batuan (RS) Padas Dengan Batuan	-2.00				0	0	0	60	
	4			-4.00				0	0	0	60	
	6			-6.00	15.38	9.12		0	0	0	> 60	
	8			-8.00				0	0	0	> 60	
	10			-10.00				0	0	0	> 60	
	12			-12.00								
	14			-14.00								
	16			-16.00								
	18			-18.00								
	20			-20.00								

0 to 10% Trace
10 to 20% Some
20 to 35% Adjective
35 to 50% And

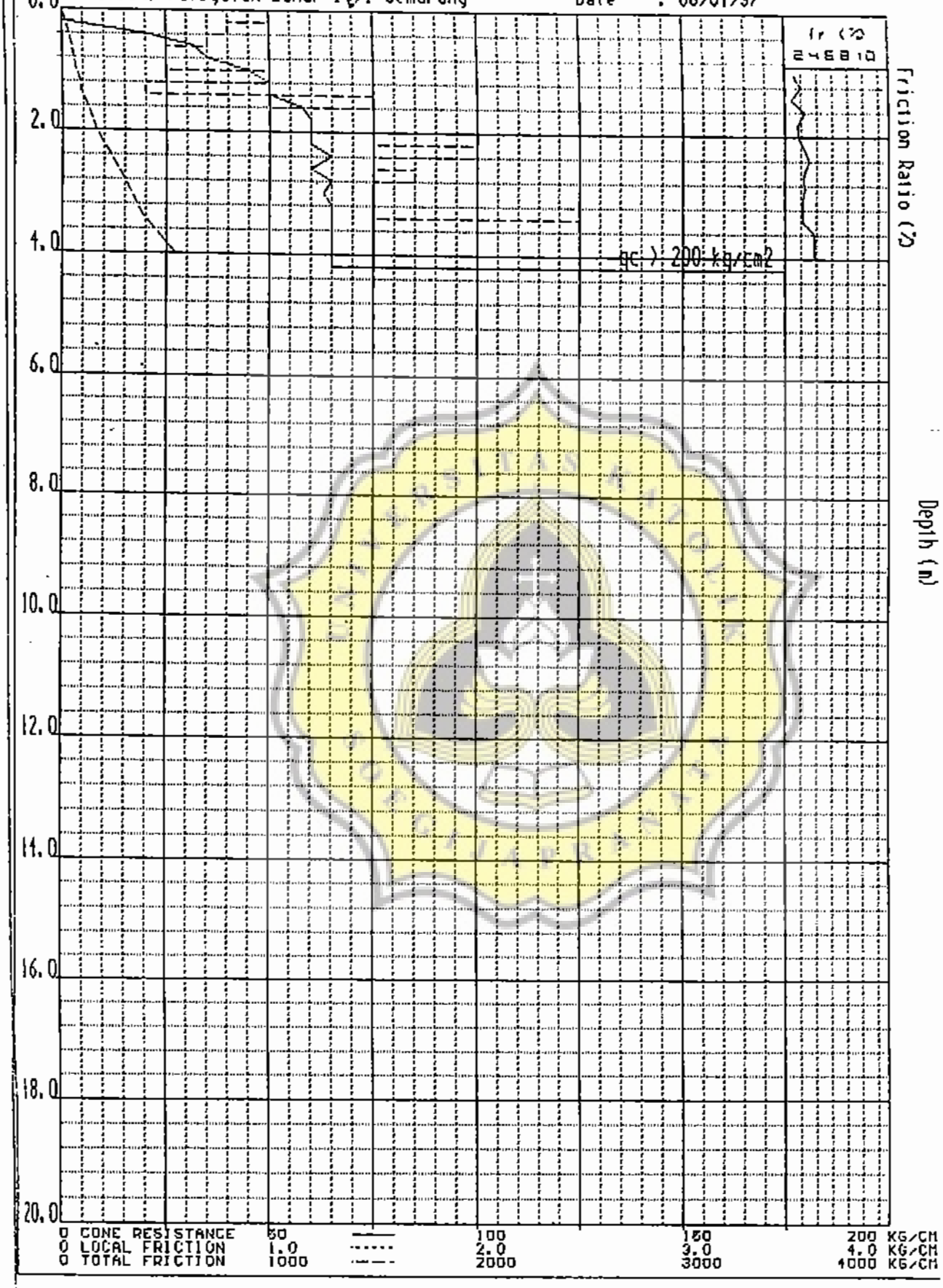
UDS - Shelby Tube
UDS - Piston
UDS - Pitcher

SPT Sample
PMT Test
Disturbed Sample

LAB MEKTAN UNIKA SOEGIJAPRANATA Job No : 1

DCPT

Project : HENDRICUS CONSTAN
Point : S1
Location: Paviyatan Luhur IV/I Semarang
Test by : Andhi
Date : 06/01/97



0 CONE RESISTANCE	50	——	100	150	200 KG/CM
0 LOCAL FRICTION	1.0	------	2.0	3.0	4.0 KG/CM
0 TOTAL FRICTION	1000	—·—	2000	3000	4000 KG/CM

LAB MEKTAN UNIKA SOEGIJAPRANATA

Job No : 2

Project : HENDRICUS CONSTAN
Point : S2
Location: Pavivatan Luhur IV/1 Semarang

Test by : Andhi
Date : 06/01/97

DCPT

qc > 200 kg/cm2

Friction Ratio (%)

Depth (m)

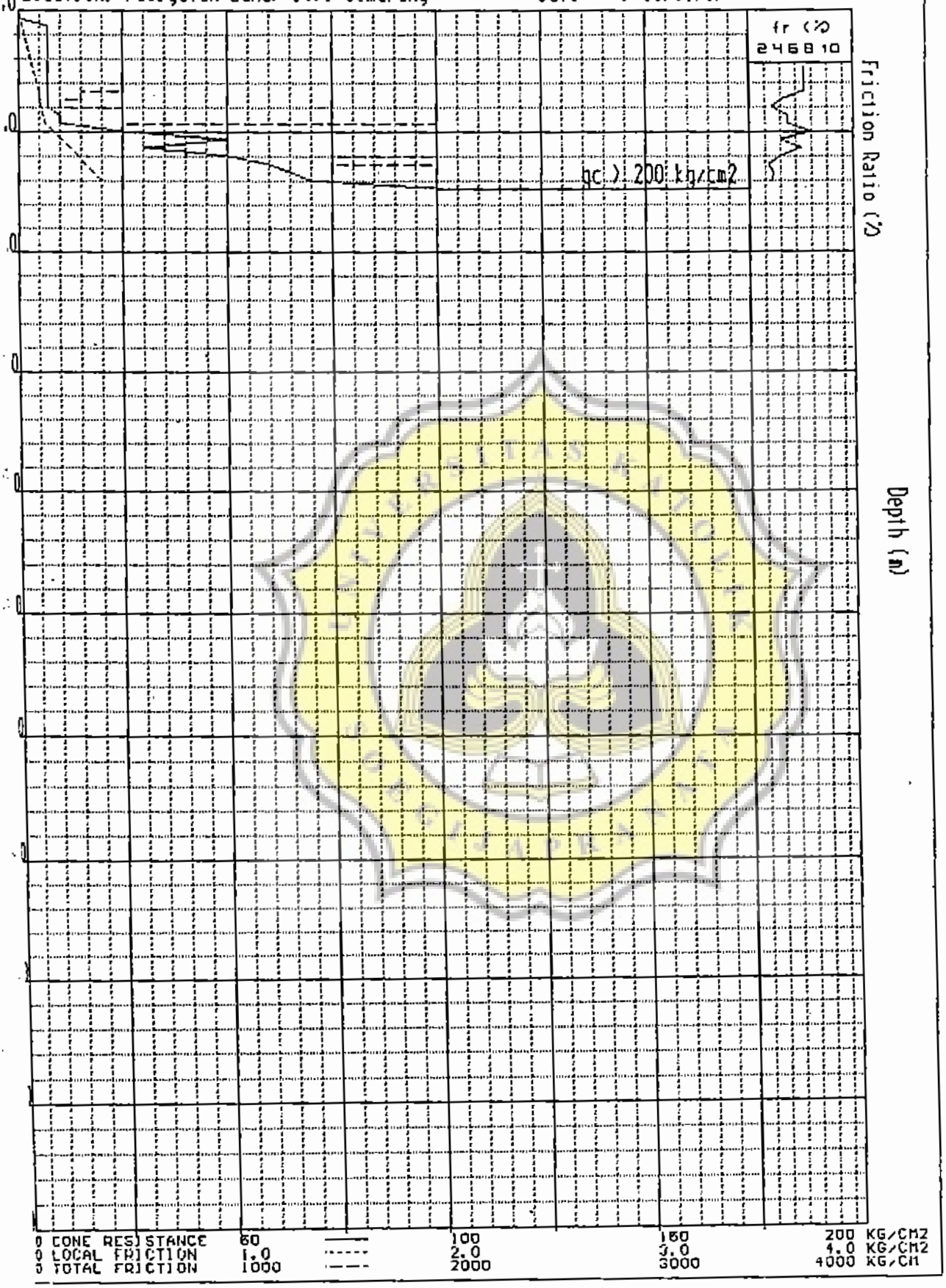
0 CONE RESISTANCE	50	——	100	150	200 KG/CM2
0 LOCAL FRICTION	1.0	------	2.0	3.0	4.0 KG/CM2
0 TOTAL FRICTION	1000	——	2000	3000	4000 KG/CM

LAB MEKTAN UNIKA SOEGIJAPRANATA Job No : 3

DCPT

Project : HENDRICUS CONSTAN
Point : S3
Location: Pavivatan Luhur IV/I Semarang

Test by : Andhi
Date : 06/01/97

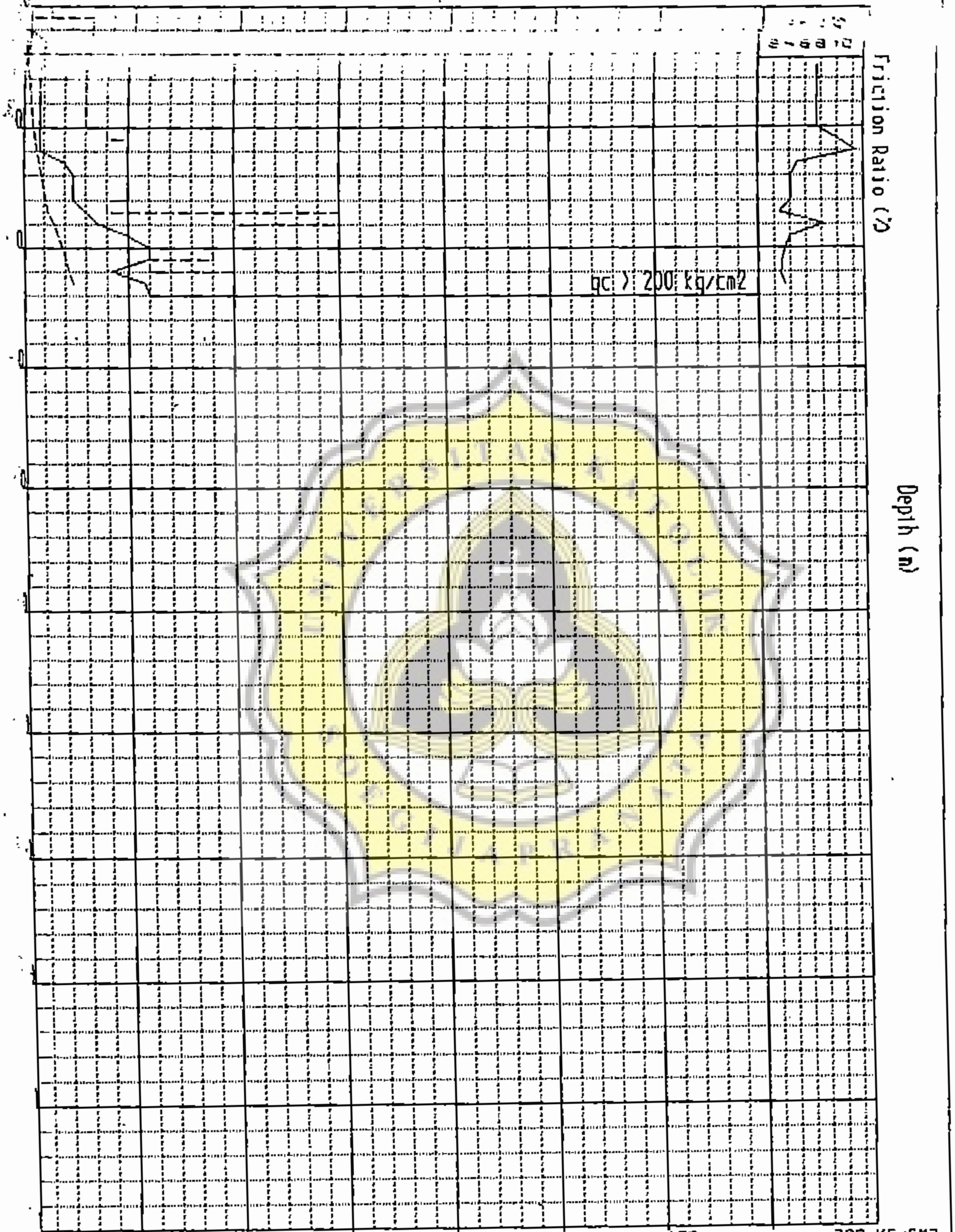


LAB MEKTAN UNIKA SOEGIJAPRANATA Job No : 4

DCPT

Project : HENDRICUS CONSTAN
Point : S4
Location: Paujuatan Luhur [illegible] Semarang

Test by : Andhi
Date : [illegible]

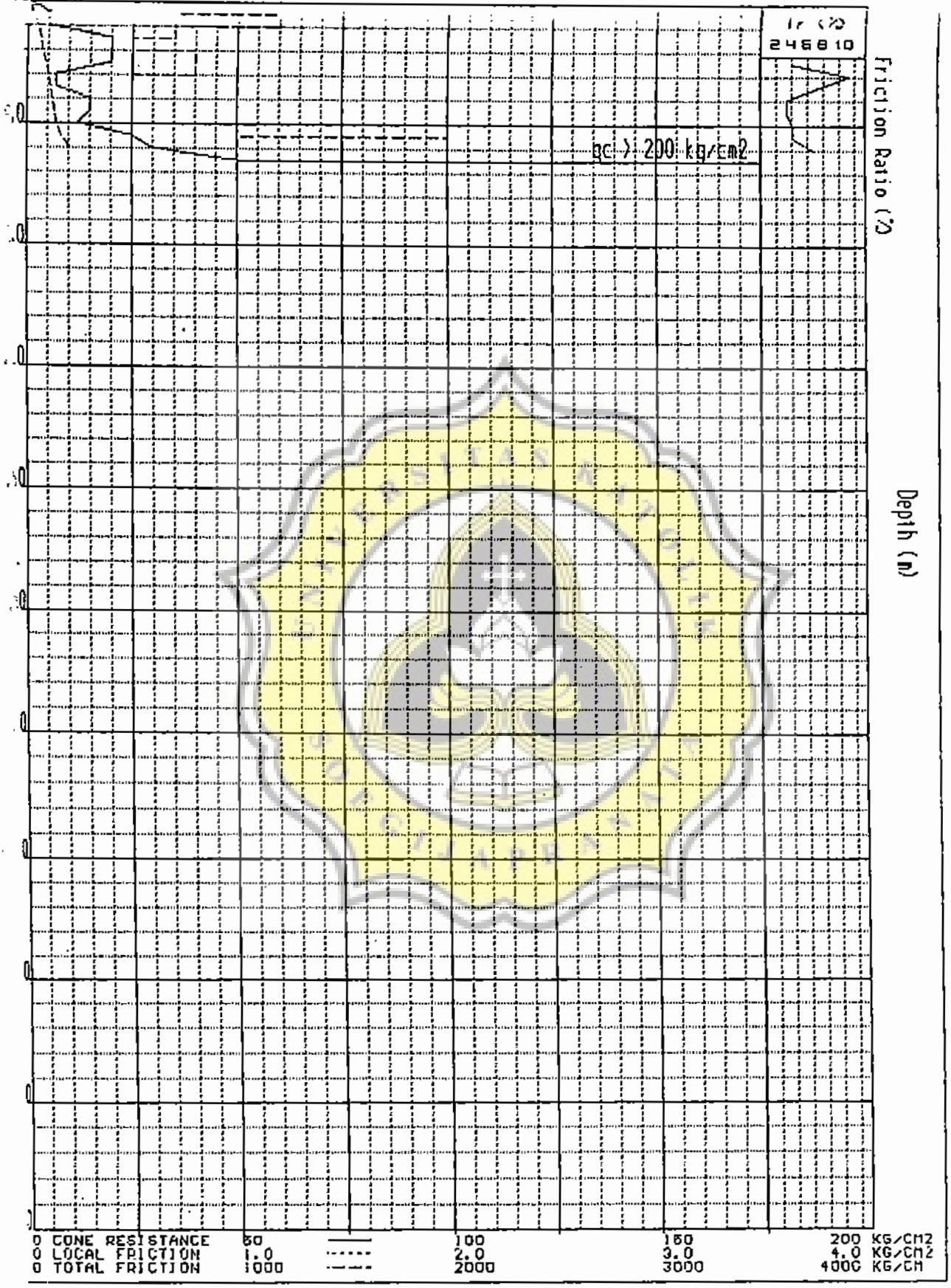


0 CONE RESISTANCE	50	———	100	150	200 KG/CM2
0 LOCAL FRICTION	1.0	······	2.0	3.0	4.0 KG/CM2
0 TOTAL FRICTION	1000	—·—·	2000	3000	4000 KG/CM

LAB MEKTAN UNIKA SOEGIJAPRANATA Job No : 5

Project : HENDRICUS CONSTAN

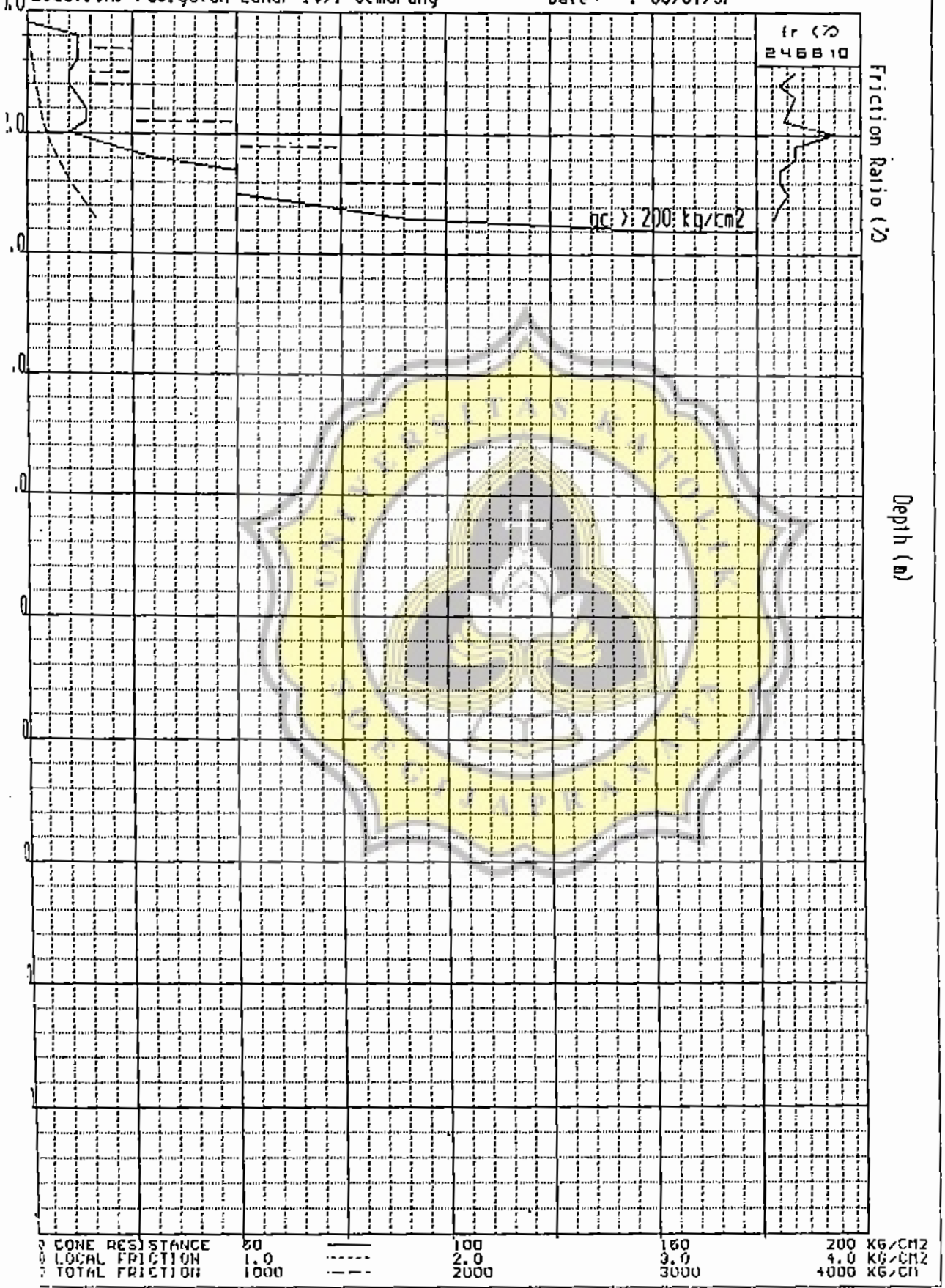
DCPT



LAB MEKTAN UNIKA SOEGIJAPRANATA Job No : 6

DCPT

Project : HENDRICUS CONSTAN
Point : S6
Location: Paviyatan Luhur IV/1 Semarang
Test by : Andhi
Date : 06/01/97



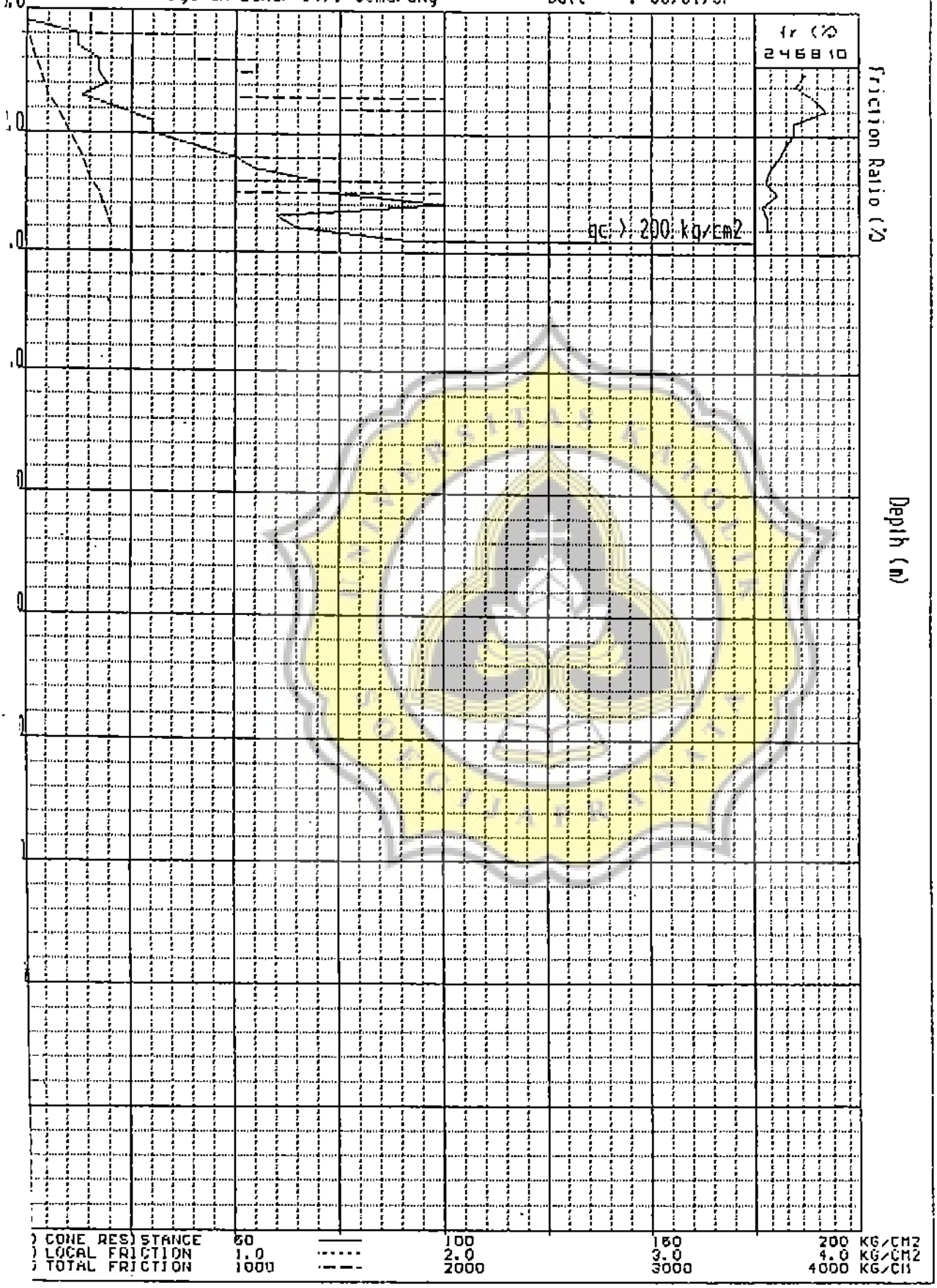
LAB MEKTAN UNIKA SOEGIJAPRANATA

Job No : 7

Project : HENDRICUS CONSTAN
Point : S7
Location: Pavilyatan Luhur IV/1 Semarang

Test by : Andhi
Date : 06/01/97

DCPT



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Telp. (024) 316142 - 441555 (Hunting)
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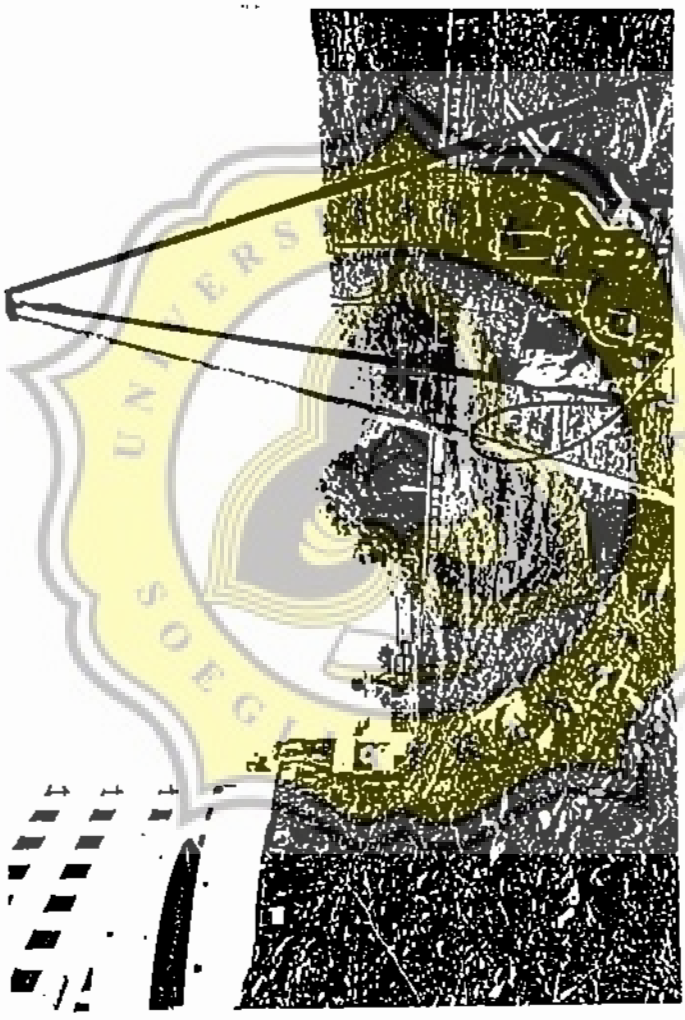

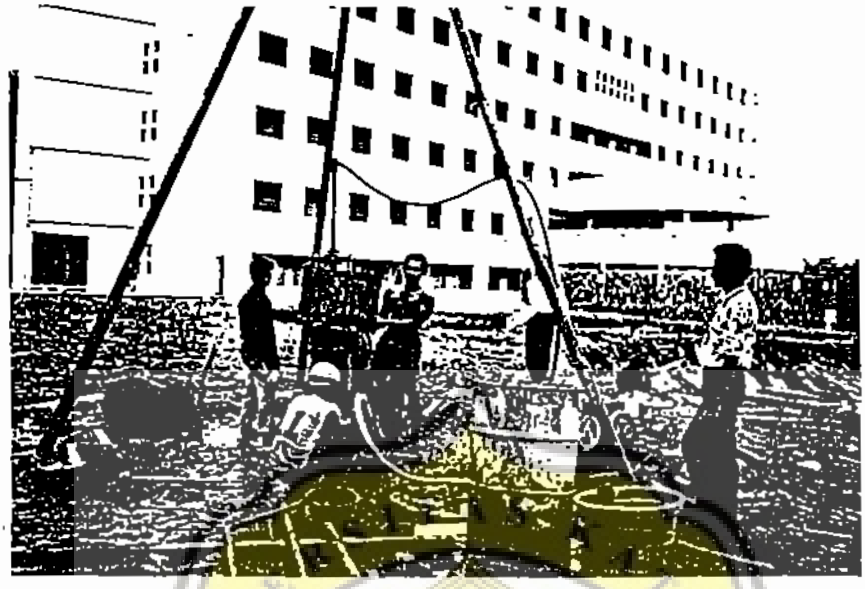

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Telp. (024) 316142 - 441555 (Hunting)
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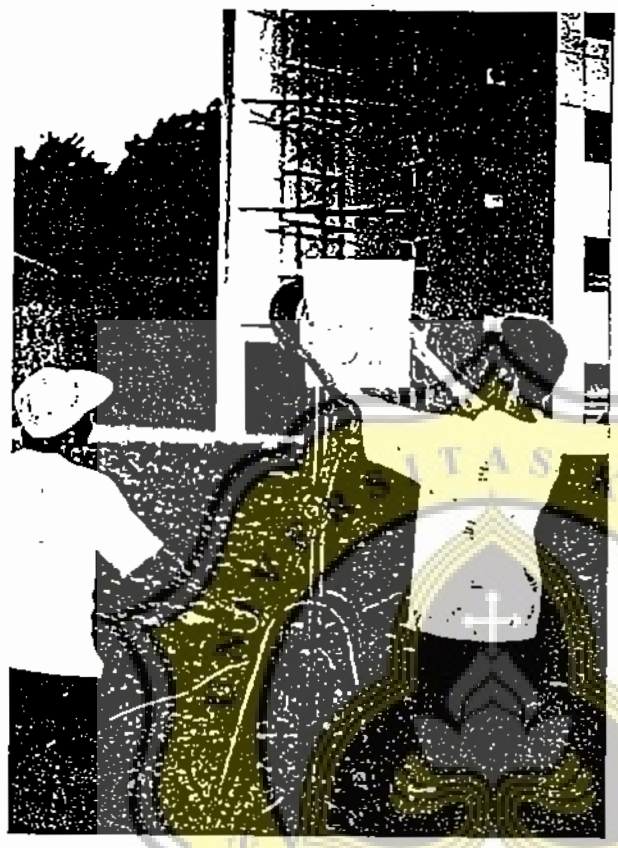

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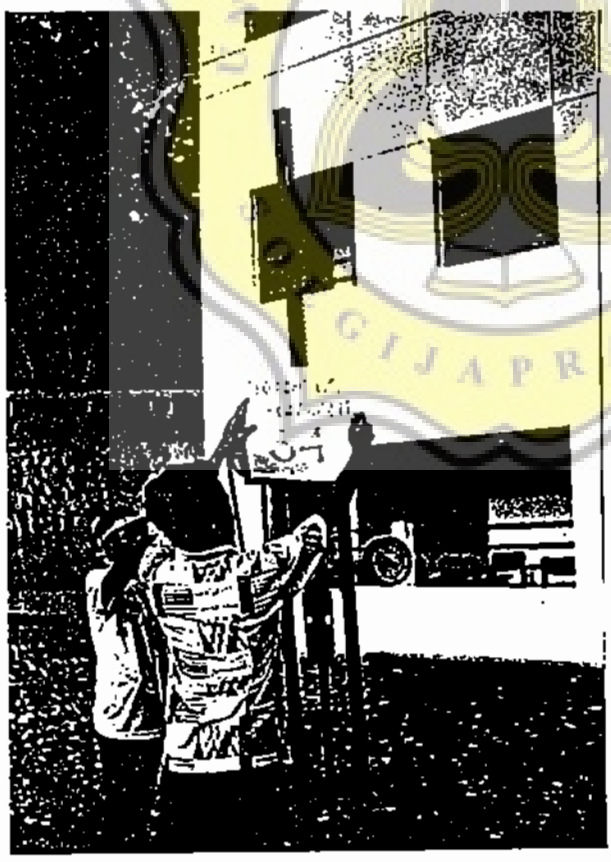

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LAMPIRAN IX.
TABEL UNTUK CARA KEKUATAN BATAS
(oleh ir. Wiratman)

$\delta = 0$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.055	.069	13.545	0	.972	.0275	6.12
.058	.073	12.793	0	.971	.029	5.96
.06	.075	12.333	0	.97	.03	5.86
.063	.079	11.698	0	-969	.0315	5.72
.065	.081	11.308	0	-968	.0325	5.64
.068	.085	10.765	0	.966	.034	5.52
.07	.088	10.429	0	.965	.035	5.44
.073	.091	9.959	0	.954	.0365	5.33
.075	.094	9.667	0	.962	.0375	5.26
.078	.097	9.256	0	.961	.039	5.17
.08	.1	9.0	0	.96	.04	5.1
.083	.104	8.639	0	.959	.0415	5.01
.085	.106	8.412	0	.958	.0425	4.96
.088	.11	8.091	0	.956	.044	4.88
.090	.112	7.889	0	.955	.045	4.82
.093	.116	7.602	0	.954	.0465	4.75
.095	.119	7.421	0	.952	.0475	4.7
.098	.122	7.163	0	.951	.049	4.63
.100	.125	7.0	0	.95	.05	4.59
.103	.129	6.767	0	.949	.0515	4.52
.105	.131	6.619	0	.948	.0525	4.48
.108	.135	6.407	0	.946	.054	4.42
.110	.138	6.273	0	.945	.055	4.39
.113	.141	6.08	0	.944	.0565	4.33
.115	.144	5.957	0	.943	.0575	4.29
.118	.148	5.78	0	.941	.059	4.24
.120	.150	5.667	0	.94	.06	4.21
.123	.154	5.504	0	.939	.0615	4.16
.125	.156	5.4	0	.938	.0625	4.13
.128	.16	5.25	0	.936	.064	4.09
.130	.163	5.154	0	.935	.065	4.06
.133	.166	5.015	0	.934	.0665	4.01
.135	.69	4.926	0	.933	.0675	3.98
.138	.173	4797	0	.931	.069	3.95
.140	.175	4.714	0	.930	.070	3.92
.143	.179	4.594	0	.929	.0715	3.88
.145	.181	4.517	0	.928	.0725	3.86
.147	.185	4.405	0	.926	.074	3.82
.150	.188	4.333	0	.925	.075	3.8
.153	.191	4.229	0	.924	.0765	3.76
.155	.194	4.161	0	.923	.0775	3.74
.158	.198	4.063	0	.921	.079	3.71
.160	.20	4.0	0	.920	.080	3.69
.163	.204	3.908	0	.918	.0815	3.66
-165	.206	3.848	0	.918	.0825	3.63
.168	.21	3.762	0	.916	.084	3.61
.170	.213	3.706	0	.915	.085	3.69
.173	.216	3.624	0	.914	.0865	3.56
.175	.219	3.571	0	.913	.0875	3.54
.178	.2220	3.494	0	.911	.089	3.51
.180	.225	3.444	0	.910	.090	3.49
.185	.229	3.372	0	.909	.0915	3.47
.185	.231	3.324	0	.908	.0925	3.45

$\delta = 0$

α	ξ_u	ϕ_u	ϕ_u'	ξ_u	q	Cu
.188	.235	3.255	0	.906	.094	3.43
.190	.238	3.211	0	.905	.095	3.41
.193	.241	3.145	0	.904	.0965	3.39
.195	.244	3.103	0	.903	.0975	3.37
.198	.248	3.04	0	.901	.099	3.35
.200	.250	3	0	.90	.10	3.33
.203	.254	2.941	0	.899	.1015	3.31
.205	.25	2.902	0	.898	.1025	3.3
.208	.26	2.846	0	.896	.1040	3.28
.21	.262	2.81	0	.895	.105	3.26
.213	.266	2.756	0	.894	.1065	3.24
.215	.269	2.721	0	.893	.1075	3.23
.218	.272	2.67	0	.891	.109	3.21
.220	.275	2.636	0	.890	.110	3.2
.223	.279	2.587	0	.889	.1115	3.18
.225	.281	2.556	0	.888	.1125	3.16
.228	.285	2.509	0	.886	.114	3.15
.230	.287	2.478	0	.885	.115	3.13
.233	.291	2.433	0	.884	.1165	3.12
.235	.294	2.404	0	.883	.1175	3.1
.238	.297	2.361	0	.881	.119	3.09
.240	.300	2.333	0	.880	.120	3.08
.243	.304	2.292	0	.879	.1215	3.06
.245	.306	2.265	0	.878	.1225	3.05
.248	.310	2.226	0	.876	.124	3.03
.250	.312	2.200	0	.876	.125	3.02
.253	.316	2.162	0	.874	.1265	3.01
.255	.319	2.137	0	.873	.1275	3.0
.258	.322	2.101	0	.871	.129	2.98
.260	.325	2.077	0	.870	.130	2.97
263	.329	2.042	0	.869	.1315	2.96
.265	.331	2.019	0	.868	.1325	2.95
.268	.335	1.985	0	.866	.134	2.94
.270	.337	1.963	0	.865	.135	2.93
.273	.341	1.930	0	.864	.1365	2.91
.275	.344	1.909	0	.863	.1375	2.90
.278	.347	1.878	0	.861	.139	2.89
.280	.35	1.857	0	.86	.14	2.88
.283	.354	1.827	0	.859	.1415	2.87
.285	.336	1.807	0	.858	.1425	2.86
.288	.36	1.778	0	.856	.144	2.85
.290	.363	1.759	0	.855	.145	2.84
.293	.366	1.73	0	.854	.1465	2.83
.295	.369	1.712	0	.853	.1475	2.82
.298	.372	1.685	0	.851	.149	2.81
.300	.375	1.667	0	.850	.150	2.800
.303	.379	1.64	0	.849	.1515	2.79
.305	.381	1.623	0	.848	.1525	2.78
.308	.385	1.597	0	.846	.154	2.77
.310	.387	1.581	0	.845	.155	2.76
.313	.391	1.556	0	.844	.1565	2.75
.315	.394	1.54	0	.843	.1575	2.74
.318	.397	1.516	0	.841	.159	2.73
.320	.4	1.5	0	.84	.16	2.73
.323	.404	1.477	0	.839	.1615	2.72
.325	.406	1.462	0	.838	.1625	2.71
.328	.41	1.439	0	.836	.164	2.7

$\delta = 0$

α	ξ_u	ϕ_u	ϕ_u'	ξ_u	q	Cu
.330	.412	1.424	0	.835	.165	2.69
.333	.416	1.402	0	.834	.1665	2.68
.335	.419	1.388	0	.833	.1675	2.68
.338	.422	1.367	0	.831	.169	2.67
.340	.425	1.353	0	.830	.170	2.66
.342	.429	1.332	0	.829	.1715	2.65
.345	.431	1.319	0	.828	.1725	2.65
.348	.435	1.299	0	.826	.174	2.64
.350	.437	1.286	0	.825	.175	2.65
.353	.441	1.266	0	.824	.1765	2.62
.355	.444	1.254	0	.823	.1775	2.62
.358	.447	1.235	0	.821	.179	2.61
.36	.45	1.222	0	.820	.180	2.60
.363	.454	1.204	0	.819	.1815	2.59
.365	.456	1.192	0	.818	.1825	2.59
.368	.460	1.174	0	.816	.184	2.58
.370	.462	1.162	0	.815	.185	2.58
.373	.466	1.145	0	.814	.1865	2.57
.375	.469	1.133	0	.813	.1875	2.56
.378	.472	1.116	0	.811	.189	2.55
.380	.475	1.105	0	.81	.19	2.55
.383	.479	1.089	0	.809	.1915	2.54
.385	.481	1.078	0	.808	.1925	2.54
.388	.485	1.062	0	.806	.194	2.53
.390	.488	1.051	0	.805	.195	2.52
.393	.491	1.036	0	.804	.1965	2.52
.395	.494	1.025	0	.803	.1975	2.51
.398	.497	1.01	0	.801	.199	2.51
.400	.500	1.0	0	.800	.200	2.50
.403	.504	.985	0	.799	.2015	2.49
.405	.506	.975	0	.798	.2025	2.49
.408	.510	.961	0	.796	.204	2.48
.410	.513	.951	0	.795	.205	2.48
.413	.516	.937	0	.794	.2065	2.47
.415	.519	.928	0	.793	.2075	2.47
.418	.523	.914	0	.791	.209	2.46
.420	.525	.905	0	.790	.210	2.46
.423	.529	.891	0	.789	.2115	2.45
.425	.531	.882	0	.788	.2125	2.44
.428	.535	.869	0	.786	.214	2.44
.430	.538	.860	0	.785	.215	2.43
.433	.541	.848	0	.784	.2165	2.43
.435	.544	.839	0	.783	.2175	2.42
.438	.547	.826	0	.781	.219	2.42
.440	.550	.818	0	.780	.220	2.41
.443	.554	.806	0	.779	.2215	2.41
.445	.556	.798	0	.778	.2225	2.40
.448	.560	.786	0	.776	.224	2.40
.450	.563	.778	0	.775	.225	2.39
.453	.566	.766	0	.774	.2265	2.39
.455	.569	.758	0	.773	.2275	2.38
.458	.573	.747	0	.771	.229	2.38
.460	.575	.739	0	.770	.230	2.38
.465	.579	.728	0	.769	.2315	2.37
.465	.581	.720	0	.768	.2325	2.37
.468	.585	.709	0	.766	.234	2.36
.470	.587	.702	0	.765	.235	2.36
.473	.591	.691	0	.764	.2365	2.35

$\delta = 0$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.478	.597	.674	0	.761	.239	2.34
.480	.600	.667	0	.76	.24	2.34
.483	.604	.656	0	.759	.2415	2.34
.485	.606	.649	0	.758	.2425	2.33
.488	.610	.639	0	.756	.244	2.33
.490	.613	.633	0	.755	.245	2.33
.493	.616	.623	0	.754	.2465	2.32
.495	.619	.616	0	.753	.2475	2.32
.498	.623	.606	0	.751	.249	2.31
.500	.625	.600	0	.750	.250	2.31
.530	.663	.509	0	.735	.265	2.27
.550	.688	.455	0	.725	.275	2.24

$\delta = 0,2$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.055	.069	13.545	-.455	.958	.03437	5.51
.058	.073	12.793	-.379	.957	.03625	5.37
.060	.075	12.3333	-.333	.956	.0375	5.28
.063	.078	11.698	-.27	.955	.03938	5.16
.065	.081	11.308	-.231	.954	.04062	5.08
.068	.085	10.765	-.176	.953	.0425	4.97
.070	.088	10.429	-.143	.952	.04375	4.90
.073	.091	9.959	-.096	.951	.04562	4.8
.075	.094	9.667	-.067	.950	.04687	4.74
.078	.097	9.256	-.026	.949	.04875	4.65
.080	.100	9.0	0	.948	.05	4.59
.083	.104	8.639	.036	.947	.05187	4.51
.085	.106	8.412	.059	.946	.05313	4.46
.088	.110	8.091	.091	.945	.055	4.39
.090	.112	7.889	.111	.944	.05625	4.34
.093	.116	7.602	.140	.943	.05813	4.27
.095	.119	7.421	.158	.942	.05937	4.23
.098	.122	7.163	.184	.941	.06125	4.17
.100	.125	7.0	.200	.940	.0625	4.13
.103	.129	6.767	.223	.939	.06438	4.07
.105	.131	6.619	.238	.938	.06562	4.03
.108	.135	6.407	.259	.937	.0675	3.98
.110	.138	6.273	.273	.936	.06875	3.94
.113	.141	6.08	.292	.935	.07063	3.89
.115	.144	5.957	.304	.934	.07188	3.86
.118	.148	5.78	.322	.933	.07375	3.81
.120	.150	5.667	.333	.932	.075	3.78
.123	.154	5.504	.350	.931	.07688	3.74
.125	.156	5.400	.360	.930	.07813	3.71
.128	.160	525	.375	.929	.080	3.67
.130	.163	5.154	.385	.928	.08125	3.64
.133	.166	5.015	.398	.927	.08313	3.60
.135	.169	4.926	.407	.926	.08438	3.58
.138	.173	4.797	.420	.925	.08625	3.54
.140	.175	4.714	.429	.924	.0875	3.52
.143	.179	4.594	.441	.923	.08938	3.48
.145	.181	4.517	.448	.922	.09063	3.46
.148	.185	4.405	.459	.921	.0925	3.43
.150	.188	4.333	.467	.920	.09375	3.41
.153	.191	4.229	.477	.919	.09563	3.37

$\delta = 0,2$

α	ξ_u	ϕ_u	ϕ_u'	ζ	q	Cu
.155	.194	4.161	.484	.918	.09687	3.35
.158	.198	4.063	.494	.917	.09875	3.32
.160	.200	4.0	.500	.916	.100	3.30
.163	.204	3.908	.509	.915	.10188	3.28
.163	.206	3.848	.515	.914	.10313	3.26
.168	.210	3.762	.524	.913	.105	3.23
.170	.213	3.706	.529	.912	.10625	3.21
.173	.216	3.624	.538	.911	.10812	3.19
.175	.219	3.571	.564	.910	.10938	3.17
.178	.222	3.494	.551	.909	.11125	3.14
.180	.225	3.444	.556	.908	.1125	3.13
.183	.229	3.372	.563	.907	.11437	3.10
.185	.231	3.325	.568	.906	.11563	3.09
.188	.235	3.255	.574	.905	.1175	3.07
.190	.238	3.211	.579	.904	.11875	3.05
.193	.241	3.145	.585	.903	.12062	3.03
.195	.244	3.103	.590	.902	.12188	3.02
.198	.248	3.04	.596	.901	.12375	2.99
.200	.250	3.0	.600	.900	.125	2.98
.203	.254	2.941	.606	.899	.12687	2.96
.205	.256	2.902	.610	.898	.12687	2.95
.208	.260	2.846	.615	.897	.130	2.93
.210	.262	2.81	.619	.896	.13125	2.92
.213	.266	2.756	.624	.895	.13312	2.90
.215	.269	2.721	.628	.894	.13438	2.89
.218	.272	2.67	.633	.893	.13625	2.87
.220	.275	2.636	.636	.892	.1375	2.86
.223	.279	2.587	.641	.891	.13937	2.84
.225	.281	2.556	.644	.890	.14062	2.83
.228	.285	2.509	.649	.889	.1425	2.81
.230	.287	2.478	.652	.888	.14375	2.80
.233	.291	2.433	.657	.887	.14562	2.78
.235	.294	2.404	.660	.886	.14687	2.77
.238	.297	2.361	.664	.885	.14875	2.76
.240	.300	2.333	.667	.884	.150	2.75
.243	.304	2.292	.671	.883	.15187	2.73
.243	.306	2.265	.673	.882	.15312	2.72
.248	.310	2.226	.677	.881	.155	2.71
.250	.312	2.2	.68	.88	.15625	2.70
.253	.316	2.162	.684	.879	.15812	2.68
.255	.319	2.137	.686	.878	.15937	2.67
.258	.322	2.101	.690	.877	.16125	2.66
.260	.325	2.077	.692	.876	.1625	2.65
.263	.329	2.042	.696	.875	.16437	2.64
.265	.331	2.019	.698	.874	.16563	2.63
.268	.335	1.985	.701	.873	.1675	2.62
.270	.337	1.963	.704	.872	.16865	2.61
.273	.341	1.930	.707	.871	.17062	2.59
.275	.344	1.909	.709	.870	.17187	2.59
.278	.347	1.878	.712	.869	.17375	2.57
.280	.350	1.857	.714	.868	.175	2.57
.285	.357	1.827	.717	.867	.17687	2.55
.285	.356	1.807	.719	.866	.17812	2.55
.288	.360	1.778	.722	.865	.180	2.53
.290	.363	1.759	.724	.864	.18125	2.53

$\delta = 0,2$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.293	.366	1.73	.727	.863	.18312	2.52
.295	.369	1.712	.729	.862	.18437	2.51
.298	.372	1.685	.732	.861	.18625	2.50
.300	.375	1.667	.733	.861	.1875	2.49
.303	.379	1.640	.736	.859	.18937	2.48
.305	.381	1.623	.738	.858	.19062	2.47
.308	.385	1.597	.740	.857	.1925	2.46
.310	.387	1.581	.742	.856	.19375	2.46
.313	.391	1.556	.744	.855	.19562	2.45
.315	.394	1.54	.746	.854	.19688	2.44
.318	.397	1.516	.746	.853	.19875	2.43
.320	.400	1.500	.750	.852	.200	2.42
.323	.404	1.477	.752	.851	.20187	2.41
.325	.406	1.462	.754	.850	.20312	2.41
.328	.410	1.439	.756	.849	.205	2.400
.330	.412	1.424	.758	.848	.20625	2.39
.333	.416	1.402	.760	.847	.20812	2.38
.335	.419	1.388	.761	.846	.20937	2.38
.338	.422	1.367	.763	.845	.21125	2.37
.340	.425	1.353	.763	.844	.2125	2.36
.343	.429	1.332	.767	.843	.21437	2.35
.345	.431	1.319	.768	.842	.21562	2.35
.348	.435	1.299	.770	.841	.2175	2.34
.350	.437	1.286	.771	.840	.21875	2.33
.353	.441	1.266	.773	.839	.22062	2.32
.355	.444	1.254	.775	.838	.22187	2.32
.358	.447	1.235	.777	.837	.22375	2.31
.360	.450	1.222	.778	.836	.225	2.31
.363	.454	1.204	.780	.835	.22687	2.30
.365	.456	1.192	.781	.834	.22812	2.29
.368	.460	1.174	.783	.833	.230	2.28
.370	.462	1.162	.784	.832	.23125	2.28
.373	.466	1.145	.786	.831	.23312	2.27
.375	.469	1.133	.787	.830	.23437	2.27
.378	.472	1.116	.788	.829	.2375	2.26
.383	.479	1.089	.791	.827	.23937	2.25
.385	.481	1.078	.792	.826	.24062	2.24
.388	.485	1.062	.794	.825	.2425	2.24
.390	.488	1.051	.795	.824	.24375	2.23
.393	.491	1.036	.796	.823	.24562	2.22
.395	.494	1.025	.797	.822	.24687	2.22
.398	.497	1.01	.799	.821	.24875	2.21
.400	.500	1.0	.800	.820	.2500	2.21
.403	.504	.985	.801	.819	.25187	2.20
.405	.506	.975	.802	.818	.25313	2.20
.408	.510	.961	.804	.817	.255	2.19
.410	.513	.951	.805	.816	.25625	2.19
.413	.516	.937	.806	.815	.25812	2.18
.415	.519	.928	.807	.814	.25938	2.18
.418	.523	.914	.809	.813	.26125	2.17
.420	.525	.906	.810	.812	.2625	2.17
.423	.529	.891	.811	.811	.26438	2.16
.425	.531	.882	.812	.810	.26563	2.16
.428	.535	.869	.813	.809	.2675	2.15

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$\delta = 0,2$

Cu	α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
2.52	.430	.538	.860	.814	.808	.26875	2.15
2.51	.433	.541	.848	.815	.807	.27063	2.14
2.50	.435	.544	.837	.816	.806	.27188	2.14
2.49	.438	.547	.826	.817	.805	.27375	2.13
2.48	.440	.550	.818	.818	.804	.2750	2.13
2.47	.443	.554	.806	.819	.803	.27688	2.12
2.46	.448	.560	.786	.821	.801	.280	2.11
2.46	.450	.563	.778	.822	.800	.28125	2.11
2.45	453	.566	.766	.823	.799	.28312	2.10
2.44	.455	.569	.758	.824	.798	.28438	2.10
2.43	.458	.573	.747	.825	.797	.28625	2.09
2.42	.460	.575	.739	.826	.796	.2875	2.09
2.41	.463	.579	.728	.827	.795	.28937	2.08
2.41	.465	.581	.720	.828	.794	.29063	2.08
2.400	.46	.585	.709	.829	.793	.2925	2.08
2.39	.47	.587	.702	.830	.792	.29375	2.07
2.38	.473	.591	.691	.831	.791	.29563	2.07
2.38	.478	.597	.674	.833	.789	.29875	2.06
2.37	.480	.600	.667	.833	.788	.300	2.06
2.36	.483	.604	.656	.834	.787	.30188	2.05
2.35	.485	.606	.649	.835	.786	.30313	2.05
2.35	.488	.610	.639	.836	.785	.305	2.04
2.34	.490	.613	.633	.837	.784	.30625	2.04
2.33	.493	.616	.623	.838	.783	.30813	2.04
2.32	.495	.619	.616	.838	.782	.30937	2.03
2.32	.498	.623	.606	.839	.781	.31125	2.03
2.31	.500	.625	.600	.840	.780	.3125	2.03
2.31	.530	.663	.509	.849	.768	.33125	1.98
2.30	.550	.688	.455	.855	.760	.344375	1.96
2.29							

$\delta = 0,4$

2.28	α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
2.28							
2.27							
2.27	.055	.069	13.545	-.455	.944	.04583	4.81
2.26	.058	.073	12.793	-.379	.943	.04833	4.68
2.25	.060	.075	12.333	-.333	.942	.050	4.61
2.24	.063	.079	11.698	-.27	.941	.0525	4.50
2.24	.065	.081	11.308	-.231	.941	.05417	4.43
2.23	.068	.085	10.765	-.176	.940	.05667	4.33
2.22	.070	.088	10.429	-.143	.939	.05833	4.27
2.22	.073	.091	9.959	-.096	.935	.06083	4.19
2.21	.075	.094	9.667	-.087	.938	.0625	4.13
2.21	.078	.097	9.256	-.026	.937	.065	4.05
2.20	.080	.100	9.00	0	.936	.06667	4.0
2.20	.083	.104	8.639	.036	.935	.06917	3.93
2.19	.085	.106	8.412	.059	.935	.07083	3.89
2.19	.088	.110	8.091	.091	.934	.07333	3.82
2.18	.090	.112	7.889	.111	.933	.075	3.78
2.18	.093	.116	7.602	.140	.932	.0775	3.72
2.17	.095	.119	7.421	.158	.932	.07917	3.68
2.17	.098	.122	7.163	.184	.931	.08167	3.63
2.16	.100	.125	7.0	.200	.930	.08333	3.59
2.16	.103	.129	6.767	.223	.929	.08583	3.54
2.15	.105	.131	6.619	.238	.929	.0875	3.51
	.108	.135	6.407	.259	.928	.090	3.46
	.110	.138	6.273	.273	.925	.09167	3.43

$\delta_{=0,4}$

α	ξ_u	ϕ_u	ϕ_u'	ζ	q	Cu
.113	.141	6.08	.292	.926	.09417	3.39
.115	.144	5.957	.304	.925	.09583	3.36
.118	.148	5.78	.322	.925	.09833	3.32
.120	.150	5.667	.333	.924	.100	3.29
.123	.154	5.504	.350	.923	.1025	3.25
.125	.156	5.400	.360	.922	.10417	3.23
.128	.160	5.25	.375	.922	.10667	3.19
.130	.163	5.154	.385	.921	.10833	3.17
.133	.166	5.015	.398	.920	.11083	3.13
.135	.169	4.926	.407	.919	.1125	3.11
.138	.173	4.797	.420	.919	.1150	3.08
.140	.175	4.714	.429	.918	.11667	3.06
.143	.179	4.594	.441	.917	.11917	3.03
.145	.181	4.517	.448	.917	.12083	3.00
.148	.185	4.405	.459	.916	.12333	2.98
.150	.188	4.333	.467	.915	.125	2.96
.153	.191	4.229	.477	.914	.1275	2.93
.155	.194	4.161	.484	.914	.12917	2.91
.158	.198	4.063	.494	.913	.13167	2.88
.160	.200	4.0	.500	.912	.1333	2.87
.163	.204	3.908	.509	.911	.13583	2.84
.165	.206	3.848	.515	.911	.1375	2.83
.168	.210	3.762	.524	.910	.140	2.80
.170	.213	3.706	.529	.909	.14167	2.79
.173	.216	3.624	.538	.908	.14417	2.76
.175	.219	3.571	.543	.908	.14583	2.75
.178	.222	3.494	.551	.907	.14833	2.73
.180	.225	3.444	.556	.906	.150	2.71
.183	.229	3.372	.563	.905	.1525	2.69
.185	.231	3.325	.568	.905	.15417	2.68
.188	.235	3.255	.574	.904	.15667	2.66
.190	.238	3.211	.579	.579	.15833	2.64
.193	.241	3.145	.585	.902	.16083	2.63
.193	.244	3.103	.590	.902	.1625	2.61
.198	.248	3.04	.596	.901	.165	2.59
.200	.25	3.0	.600	.900	.16667	2.58
.203	.254	2.941	.606	.899	.16917	2.56
.205	.256	2.902	.610	.898	.17083	2.55
.208	.260	2.846	.615	.898	.17333	2.53
.210	.262	2.81	.619	.897	.175	2.52
.213	.266	2.756	.624	.896	.1775	2.51
.215	.269	2.721	.628	.896	.17917	2.50
.218	.272	2.67	.633	.895	.18167	2.48
.220	.275	2.636	.636	.894	.18333	2.47
.223	.279	2.587	.641	.834	.18583	2.45
.225	.281	2.556	.644	.893	.1875	2.44
.228	.285	2.509	.649	.892	.190	2.43
.230	.287	2.478	.652	.891	.19167	2.42
.233	.291	2.433	.657	.890	.19417	2.41
.235	.294	2.404	.660	.890	.19583	2.41
.238	.297	2.361	.664	.889	.19833	2.39
.240	.300	2.333	.667	.888	.200	2.39
.243	.304	2.292	.671	.887	.2025	2.3
.245	.306	2.265	.673	.887	.20417	2.3
.248	.310	2.226	.677	.886	.20667	2.3
.250	.312	2.2	.680	.884	.21083	2.3
.253	.316	2.162	.684	.884	.21083	2.3

$\delta = 0,4$

Cu	α	ξ_u	ϕ_u	ϕ_u'	ζ	q	Cu
3.39							
3.36	.255	.319	2.137	.686	.884	.2125	2.31
3.32	.258	.322	2.101	.690	.883	.215	2.30
3.29	.260	.325	2.077	.692	.882	.21667	2.29
3.25	.263	.329	2.042	.696	.881	.21917	2.28
3.23	.265	.331	2.019	.698	.881	.22083	2.27
3.19	.268	.335	1.985	.701	.880	.22333	2.26
3.17	.270	.337	1.963	.704	.879	.225	2.25
3.13	.273	.341	1.93	.707	.878	.2275	2.24
3.11	.275	.344	1.909	.709	.878	.22917	2.23
3.08	.278	.347	1.878	.712	.877	.23167	2.22
3.06	.280	.350	1.857	.714	.876	.2333	2.21
3.03	.283	.354	1.827	.717	.875	.23583	2.20
3.00	.285	.356	1.807	.719	.875	.2375	2.19
2.98	.228	.360	1.778	.722	.874	.240	2.18
2.96	.290	.363	1.759	.724	.873	.24167	2.18
2.93	.293	.366	1.73	.727	.872	.24417	2.17
2.91	.295	.369	1.712	.729	.871	.24583	2.16
2.88	.298	.372	1.685	.732	.871	.24833	2.15
2.87	.300	.375	1.667	.733	.870	.250	2.14
2.84	.303	.379	1.64	.736	.869	.2525	2.13
2.83	.305	.381	1.623	.738	.868	.25417	2.13
2.80	.308	.385	1.598	.740	.868	.25667	2.12
2.79	.310	.387	1.581	.742	.867	.25833	2.11
2.76	.313	.391	1.556	.744	.866	.26083	2.10
2.75	.315	.394	1.54	.746	.865	.2625	2.10
2.73	.318	.397	1.516	.748	.865	.265	2.09
2.71	.320	.400	1.500	.750	.864	.26667	2.08
2.69	.323	.404	1.477	.752	.863	.26917	2.07
2.68	.325	.406	1.462	.754	.863	.27083	2.07
2.66	.328	.410	1.439	.756	.862	.27333	2.06
2.64	.330	.412	1.424	.758	.861	.275	2.06
2.63	.333	.416	1.402	.760	.860	.2775	2.05
2.61	.335	.419	1.388	.761	.860	.27917	2.04
2.59	.338	.422	1.367	.763	.859	.28167	2.03
2.58	.340	.425	1.353	.765	.858	.28333	2.03
2.56	.345	.429	1.332	.767	.857	.28583	2.02
2.55	.345	.431	1.319	.768	.857	.2875	2.01
2.53	.348	.435	1.299	.770	.856	.290	2.01
2.52	.350	.437	1.286	.771	.855	.29167	2.00
2.51	.353	.441	1.266	.773	.854	.29417	2.00
2.50	.355	.444	1.254	.775	.854	.29583	1.99
2.48	.358	.447	1.235	.777	.853	.29833	1.98
2.47	.360	.450	1.222	.778	.852	.300	1.98
2.45	.363	.454	1.204	.780	.851	.3025	1.97
2.44	.365	.456	1.192	.781	.851	.30417	1.97
2.43	.368	.460	1.174	.783	.850	.30667	1.96
2.42	.370	.462	1.162	.784	.849	.30833	1.95
2.41	.373	.466	1.145	.786	.848	.31083	1.95
2.40	.375	.469	1.133	.787	.847	.3125	1.94
2.38	.378	.472	1.116	.788	.847	.315	1.94
2.37	.380	.475	1.105	.789	.846	.31667	1.93
2.36	.383	.479	1.089	.791	.845	.31917	1.93
2.35	.385	.481	1.078	.792	.844	.32083	1.92
2.34	.388	.485	1.062	.794	.844	.32333	1.91
2.33							
2.32							

$\delta = 0,4$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.393	.491	1.036	.796	.842	.3275	1.9
.395	.494	1.025	.797	.842	.32917	1.90
.398	.497	1.01	.799	.841	.33167	1.89
.400	.500	1.0	.800	.84	.3333	1.89
.403	.504	.985	.801	.839	.33583	1.88
.405	.506	.975	.802	.839	.3375	1.88
.408	.510	.961	.804	.838	.340	1.87
.410	.513	.951	.805	.837	.34167	1.87
.413	.516	.937	.806	.836	.34417	1.86
.415	.519	.928	.807	.836	.34583	1.86
.418	.523	.914	.809	.835	.34833	1.85
.420	.525	.905	.810	.834	.350	1.85
.423	.529	.891	.811	.833	.3525	1.85
.425	.531	.882	.812	.833	.35417	1.84
.428	.535	.869	.813	.832	.35667	1.84
.430	.538	.860	.814	.831	.35833	1.83
.433	.541	.848	.815	.830	.36083	1.83
.435	.544	.839	.816	.830	.3625	1.82
.438	.547	.826	.817	.829	.365	1.82
.440	.550	.818	.818	.828	.36667	1.81
.443	.554	.806	.819	.827	.36917	1.81
.445	.556	.798	.820	.827	.37083	1.81
.448	.560	.786	.821	.826	.37333	1.80
.450	.563	.778	.822	.825	.375	1.80
.453	.566	.766	.823	.824	.3775	1.79
.455	.569	.758	.824	.824	.37917	1.79
.458	.573	.747	.825	.823	.38167	1.78
.460	.575	.739	.826	.822	.38333	1.78
.463	.579	.728	.827	.821	.38583	1.78
.465	.581	.720	.828	.820	.3875	1.77
.468	.585	.709	.829	.820	.390	1.77
.470	.587	.702	.830	.819	.39167	1.77
.473	.591	.691	.831	.818	.39417	1.76
.478	.597	.674	.833	.817	.39833	1.75
.480	.600	.667	.833	.816	.400	1.75
.483	.604	.656	.834	.815	.4025	1.75
.485	.606	.649	.834	.815	.40417	1.74
.488	.610	.639	.836	.814	.40667	1.74
.490	.613	.633	.837	.813	.40833	1.74
.493	.616	.623	.838	.812	.41083	1.73
.495	.619	.616	.838	.812	.4125	1.73
.498	.623	.606	.839	.811	.415	1.72
.500	.625	.600	.840	.810	.41667	1.72
.530	.663	.509	.849	.801	.44167	1.68
.550	.688	.455	.855	.795	.45833	1.66

$\delta = 0,6$

Cu	α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
	.055	.069	13.545	-.455	.929	.06875	3.96
	.058	.073	12.793	-.379	.928	.0725	3.86
	.060	.075	12.333	-.333	.928	.075	3.79
	.063	.079	11.698	-.27	.927	.07875	3.7
1.9	.065	.081	11.308	-.231	.927	.08125	3.64
1.90							
1.89	.068	.085	10.765	-.176	.926	.085	3.56
1.89	.070	.088	10.429	-.143	.926	.0875	3.51
1.88	.073	.091	9.959	-.096	.925	.09125	3.44
	.075	.094	9.667	-.067	.925	.09375	3.40
1.88	.078	.097	9.256	-.026	.924	.0975	3.33
1.87							
1.87	.080	.100	9.0	0	.924	.100	3.29
1.86	.083	.104	8.639	.036	.923	.10375	3.23
1.86	.085	.106	8.412	.059	.923	.10625	3.19
	.088	.110	8.091	.091	.922	.110	3.14
1.85	.090	.112	7.889	.111	.922	.1125	3.10
1.85							
1.85	.093	.116	7.602	.140	.921	.11625	3.06
1.84	.095	.119	7.421	.158	.921	.11875	3.02
1.84	.098	.122	7.163	.184	.920	.1225	2.98
	.100	.125	7.0	.200	.920	.125	2.95
1.83	.103	.129	6.767	.223	.919	.12875	2.91
1.83							
1.82	.105	.131	6.619	.238	.919	.13125	2.88
1.82	.108	.135	6.407	.259	.918	.135	2.84
1.81	.110	.138	6.273	.273	.918	.1375	2.81
	.113	.141	6.08	.292	.917	.14125	2.78
1.81	.115	.144	5.957	.304	.917	.14375	2.75
1.81							
1.80	.118	.148	5.78	.322	.916	.1475	2.72
1.80	.120	.150	5.667	.333	.916	.150	2.70
1.79	.123	.154	5.504	.350	.915	.15375	2.67
	.125	.156	5.40	.360	.915	.15625	2.64
1.79	.128	.160	5.25	.375	.914	.160	2.61
1.78							
1.78	.130	.163	5.154	.385	.914	.1625	2.59
1.78	.133	.166	5.015	.398	.913	.16625	2.57
1.77	.135	.169	4.926	.407	.913	.16875	2.55
	.138	.173	4.797	.420	.912	.1725	2.52
1.77	.140	.175	4.714	.425	.912	.175	2.50
1.77							
1.76	.143	.179	4.594	.441	.911	.17875	2.48
1.75	.145	.181	4.517	.448	.911	.18125	2.46
1.75	.148	.185	4.405	.459	.910	.1850	2.44
	.150	.188	4.333	.467	.910	.1875	2.42
1.75	.153	.191	4229	.477	.909	.19125	2.40
1.74							
1.74	.155	.194	4.161	.484	.909	.19375	2.38
1.74	.158	.198	4.063	.494	.908	.1975	2.36
1.73	.160	.200	4.0	.500	.908	.2	2.35
	.163	.204	3.906	.509	.907	.20375	2.33
1.73	.165	.206	3.848	.515	.907	.20625	2.31
1.72							
1.72	.168	.210	3.762	.524	.906	.210	2.29
1.68	.170	.213	3.706	.529	.906	.2125	2.28
1.66	.173	.216	3.624	.538	.905	.21625	2.26
	.175	.219	3.571	.543	.905	.21875	2.25
	.178	.222	3.494	.551	.905	.2225	2.23
	.180	.225	3.444	.556	.904	.225	2.22
	.183	.229	3.372	.563	.903	.22875	2.20
	.185	.231	3.324	.568	.903	.23125	2.19
	.188	.235	3.255	.574	.902	.235	2.17
	.190	.238	3.211	.579	.902	.2375	2.16
	.193	.241	3.145	.585	.901	.24125	2.14
	.195	.244	3.103	.590	.901	.24375	2.13
	.198	.248	3.04	.596	.9	.2475	2.12
	.200	.25	3	.600	.9	.2500	2.11
	.203	.254	2.941	.606	.899	.25375	2.09

$\delta = 0,6$

α	ξ_u	ϕ_u	ϕ_u'	ξ	q	Cu
.205	.256	2.902	.610	.899	.25625	2.08
.208	.260	2.846	.615	.898	.260	2.07
.210	.262	2.81	.619	.898	.2625	2.06
.213	.266	2.756	.624	.897	.26625	2.05
.215	.269	2.721	.728	.897	.26875	2.04
.218	.272	2.67	.633	.896	.2725	2.02
.220	.275	2.636	.636	.896	.275	2.01
.223	.279	2.587	.641	.896	.27875	2.00
.225	.281	2.556	.644	.895	.28125	1.99
.228	.285	2.509	.649	.894	.285	1.98
.230	.287	2.477	.652	.894	.2875	1.97
.233	.291	2.433	.657	.893	.29125	1.96
.235	.294	2.404	.660	.893	.29375	1.95
.238	.297	2.361	.664	.892	.2975	1.94
.240	.300	2.333	.667	.892	.300	1.93
.243	.304	2.292	.671	.891	.30375	1.92
.245	.306	2.265	.673	.891	.30625	1.91
.248	.310	2.226	.677	.890	.310	1.90
.250	.312	2.2	.68	.89	.3125	1.90
.253	.316	2.162	.684	.889	.31625	1.89
.255	.319	2.137	.686	.889	.31875	1.88
.258	.322	2.101	.690	.888	.3225	1.87
.260	.325	2.077	.692	.888	.325	1.86
.263	.329	2.042	.696	.887	.32875	1.85
.265	.331	2.019	.698	.887	.33125	1.84
.268	.335	1.985	.701	.886	.335	1.84(
.270	.337	1.963	.704	.886	.3375	1.83
.273	.341	1.93	.707	.885	.34125	1.82
.275	.344	1.909	.709	.885	.34375	1.81
.278	.347	1.878	.712	.884	.34375	1.80
.280	.350	1.857	.714	.884	.350	1.80
.283	.354	1.827	.717	.883	.35375	1.79
.285	.356	1.807	.719	.883	.35625	1.78
.288	.360	1.778	.722	.882	.360	1.77
.290	.363	1.759	.724	.882	.3625	1.77
.293	.366	1.73	.727	.881	.36625	1.76
.295	.369	1.712	.729	.881	.36875	1.75
.298	.372	1.685	.732	.880	.3725	1.75
.300	.375	1.667	.733	.88	.375	1.74
.303	.379	1.64	.736	.879	.37875	1.73
.305	.381	1.623	.738	.879	.38125	1.73
.308	.385	1.597	.740	.878	.375	1.72
.310	.387	1.581	.742	.878	.3875	1.71
.313	.391	1.556	.744	.877	.39125	1.71
.315	.394	1.54	.746	.877	.39375	1.70
.318	.397	1.516	.748	.876	.3975	1.69
.320	.400	1.5	.75	.876	.400	1.69
.323	.404	1.477	.752	.875	.40375	1.68
.325	.406	1.462	.754	.875	.40625	1.68
.328	.41	1.439	.756	.874	.410	1.67
.330	.412	1.424	.758	.874	.4125	1.67
.333	.416	1.402	.760	.873	.41625	1.66
.335	.419	1.388	.761	.873	.41875	1.65
.338	.422	1.367	.763	.872	.4225	1.65
.340	.425	1.353	.765	.872	.425	1.64
.343	.429	1.332	.767	.871	.42875	1.64
.345	.431	1.319	.768	.871	.43125	1.63
.348	.435	1.299	.770	.870	.435	1.63
.350	.437	1.286	.771	.87	.4375	1.62
.353	.441	1.266	.773	.869	.44125	1.61

$\delta = 0,6$

Cu	α	ξ_u	ϕ_u	ϕ_u'	ζ_u	q	Cu
2.08							
2.07	.355	.444	1.254	.775	.869	.44375	1.61
2.06	.358	.447	1.235	.777	.868	.4475	1.60
2.05	.360	.450	1.222	.778	.868	.450	1.60
2.04	.363	.454	1.204	.78	.867	.45375	1.59
2.02	.365	.456	1.192	.781	.867	.45625	1.59
2.01							
2.00	.368	.460	1.174	.783	.866	.460	1.58
1.99	.370	.462	1.162	.784	.866	.4625	1.58
1.98	.373	.466	1.145	.786	.865	.46625	1.57
1.97	.375	.469	1.133	.787	.865	.46875	1.57
1.96	.378	.472	1.116	.788	.864	.4725	1.57
1.95	.380	.475	1.105	.789	.864	.475	1.56
1.94	.383	.479	1.089	.791	.863	.47875	1.56
1.93	.385	.481	1.078	.792	.863	.48125	1.55
1.92	.388	.485	1.062	.794	.862	.485	1.55
1.91	.390	.488	1.051	.795	.862	.4875	1.54
1.90	.393	.491	1.036	.796	.861	.49125	1.54
1.90	.395	.494	1.025	.797	.861	.49375	1.53
1.89	.398	.497	1.01	.799	.860	.4975	1.53
1.88	.400	.500	1.0	.800	.86	.500	1.52
1.87	.403	.504	1.585	.801	.859	.50375	1.52
1.86	.405	.506	.975	.802	.859	.50625	1.52
1.85	.408	.510	.961	.804	.858	.510	1.51
1.84	.410	.513	.951	.805	.858	.5125	1.51
1.840	.413	.516	.937	.806	.857	.51625	1.50
1.83	.415	.519	.928	.807	.857	.51875	1.50
1.82	.418	.528	.914	.809	.856	.5225	1.50
1.81	.420	.525	.905	.810	.856	.525	1.49
1.80	.423	.529	.891	.811	.855	.52875	1.49
1.80	.425	.531	.882	.812	.855	.53125	1.48
1.79	.428	.535	.869	.183	.854	.535	1.48
1.78	.430	.538	.860	.814	.954	.5375	1.48
1.77	.433	.541	.848	.815	.853	.54125	1.47
1.77	.435	.544	.839	.816	.853	.54375	1.47
1.76	.438	.547	.826	.817	.852	.5475	1.46
1.75	.440	.550	.818	.818	.852	.550	1.46
1.75	.443	.554	.806	.819	.851	.55375	1.46
1.74	.445	.556	.798	.820	.851	.55625	1.45
1.73	.448	.560	.786	.821	.850	.5625	1.45
1.73	.450	.563	.778	.822	.850	.5625	1.45
1.72	.453	.566	.766	.823	.849	.56625	1.44
1.71	.455	.569	.758	.824	.849	.56875	1.44
1.71	.458	.573	.747	.825	.848	.5725	1.44
1.70	.460	.575	.739	.825	.826	.848	1.43
1.69	.463	.579	.728	.827	.847	.57875	1.43
1.69	.465	.581	.720	.828	.847	.58125	1.43
1.68	.468	.585	.709	.829	.846	.585	1.42
1.68	.470	.587	.702	.830	.846	.5875	1.42
1.67	.473	.591	.691	.831	.845	.59125	1.41
1.67	.478	.597	.674	.833	.844	.5975	1.41
1.66	.480	.600	.667	.833	.844	.600	1.41
1.65	.483	.604	.656	.834	.843	.60375	1.40
1.65	.485	.606	.649	.835	.843	.60625	1.40
1.64	.488	.610	.639	.836	.842	.610	1.40
1.64	.490	.613	.633	.837	.842	.6125	1.39
1.63	.493	.616	.623	.838	.841	.61625	1.39
1.63	.495	.619	.616	.838	.841	.61875	1.39
1.62	.498	.623	.606	.839	.840	.6225	1.38
1.61	.500	.625	.600	.840	.840	.625	1.38
	.530	.663	.509	.849	.834	.6625	1.35
	.550	.688	.455	.855	.830	.6875	1.32

$\delta = 0,8$

α	ξ_u	ϕ_u	ϕ_u'	ζ	q	Cu
.055	.069	13.545	-.455	.915	.1375	2.82
.058	.073	12.793	-.379	.914	.145	2.75
.060	.075	12.333	-.333	.914	.150	2.70
.063	.075	11.698	-.270	.914	.1575	2.64
.065	.081	11.308	-.231	.913	.1625	2.60
.068	.085	10.765	-.176	.913	.170	2.54
.070	.088	10.429	-.143	.913	.175	2.50
.075	.091	9.9595	-.096	.913	.1825	2.45
.075	.094	9.667	-.067	.912	.1875	2.42
.078	.097	9.256	-.026	.912	.195	2.37
.080	.100	9.0	0	.912	.200	2.34
.083	.104	8.639	.036	.912	.2075	2.30
.085	.106	8.412	.056	.912	.2125	2.27
.088	.110	8.091	.091	.911	.22	2.23
.090	.112	7.889	.111	.911	.225	2.21
.093	.116	7.602	.140	.911	.2325	2.17
.095	.119	7.421	.158	.911	.2375	2.15
.098	.122	7.163	.184	.91	.245	2.12
.100	.125	7.0	.2	.91	.25	2.1
.103	.129	6.767	.223	.910	.2575	2.07
.105	.131	6.619	.238	.909	.2625	2.05
.108	.135	6.407	.259	.909	.270	2.02
.110	.138	6.273	.273	.909	.275	2.00
.113	.141	6.08	.292	.909	.2825	1.97
.115	.144	5.957	.304	.908	.2875	1.96
.118	.148	5.78	.322	.908	.295	1.93
.120	.150	5.667	.333	.908	.300	1.92
.123	.154	5.504	.350	.908	.3075	1.89
.125	.156	5.40	.360	.908	.3125	1.88
.128	.160	5.25	.375	.907	.320	1.86
.130	.63	5.154	.385	.907	.325	1.84
.133	.166	5.015	.398	.907	.3325	1.82
.135	.169	4.926	.407	.906	.3375	1.81
.138	.173	4.797	.420	.906	.345	1.79
.140	.175	4.714	.429	.906	.350	1.78
.143	.179	4.594	.441	.906	.3575	1.76
.145	.181	4.517	.448	.905	.3629	1.75
.148	.185	4.405	.459	.905	.370	1.73
.150	.188	4.333	.467	.905	.375	1.72
.157	.191	4.229	.477	.905	.3825	1.70
.155	.194	4.16	.484	.905	.3875	1.69
.158	.198	4.063	.494	.904	.395	1.67
.160	.200	4.0	.500	.904	.400	1.66
.163	.204	3.908	.509	.904	.4075	1.65
.165	.206	3.848	.515	.904	.4125	1.64
.168	.210	3.762	.524	.903	.420	1.62
.170	.213	3.706	.529	.903	.425	1.61
.173	.216	3.624	.538	.903	.4325	1.60
.175	.219	3.571	.543	.902	.4375	1.59
.178	.222	3.494	.551	.902	.445	1.58
.180	.225	3.444	.556	.902	.450	1.57
.183	.229	3.372	.563	.902	.4575	1.56
.185	.231	3.324	.568	.902	.4625	1.55
.188	.235	3.255	.574	.901	.470	1.54
.190	.238	3.211	.579	.901	.475	1.53
.193	.241	3.145	.585	.901	.4825	1.52
.195	.244	3.103	.590	.901	.4875	1.51
.198	.248	3.04	.596	.900	.495	1.50
.200	.250	3.0	.60	.900	.500	1.49
.203	.254	2.941	.606	.900	.5075	1.48

$\delta = 0$

Cu	α	ξ_u	ϕ_u	ϕ_u'	φ	q	Cu
2.82	.205	.256	2.902	.610	.899	.5125	1.47
2.75	.208	.260	2.846	.615	.899	.520	1.46
2.70	.210	.262	2.81	.619	.899	.525	1.46
2.64	.213	.266	2.756	.624	.899	.5325	1.45
2.60	.215	.269	2.721	.628	.898	.5375	1.44
2.54	.218	.272	2.67	.633	.898	.545	1.43
2.50	.22	.275	2.636	.636	.898	.550	1.42
2.45	.223	.279	2.587	.641	.898	.5575	1.41
2.42	.225	.281	2.556	.644	.898	.5625	1.41
2.37	.228	.285	2.509	.649	.897	.570	1.40
2.34	.230	.287	2.478	.652	.898	.575	1.39
2.30	.233	.291	2.433	.657	.897	.5825	1.38
2.27	.235	.294	2.404	.660	.896	.5875	1.38
2.23	.238	.297	2.361	.664	.896	.595	1.37
2.21	.240	.300	2.333	.667	.896	.600	1.36
2.17	.243	.304	2.292	.671	.896	.6075	1.36
2.15	.245	.306	2.265	.673	.895	.6125	1.35
2.12	.248	.310	2.226	.677	.895	.620	1.34
2.1	.250	.312	2.20	.680	.895	.625	1.34
2.07	.253	.316	2.162	.684	.895	.6325	1.33
2.05	.255	.319	2.137	.686	.895	.6375	1.32
2.02	.258	.322	2.101	.690	.894	.645	1.32
2.00	.260	.325	2.077	.692	.894	.650	1.31
1.97	.263	.329	2.042	.696	.894	.6575	1.30
1.96	.265	.331	2.019	.698	.894	.6625	1.30
1.93	.268	.335	1.985	.701	.893	.670	1.29
1.92	.270	.337	1.963	.704	.893	.675	1.29
1.89	.273	.341	1.93	.707	.893	.6825	1.28
1.88	.275	.344	1.909	.709	.892	.6875	1.28
1.86	.278	.347	1.878	.712	.892	.695	1.27
1.84	.280	.350	1.857	.714	.892	.700	1.27
1.82	.283	.354	1.827	.717	.892	.7075	1.26
1.81	.285	.356	1.807	.719	.891	.7125	1.26
1.79	.288	.360	1.778	.722	.891	.720	1.25
1.78	.290	.363	1.759	.724	.891	.725	1.24
1.76	.293	.366	1.73	.727	.891	.7325	1.24
1.75	.295	.369	1.712	.729	.891	.7375	1.23
1.73	.298	.372	1.685	.732	.890	.745	1.23
1.72	.300	.375	1.667	.733	.890	.750	1.22
1.70	.303	.379	1.640	.736	.890	.7575	1.22
1.69	.305	.381	1.623	.738	.889	.7625	1.21
1.67	.308	.385	1.597	.740	.889	.770	1.21
1.66	.310	.387	1.581	.742	.889	.775	1.20
1.65	.313	.391	1.556	.744	.889	.7825	1.20
1.64	.315	.394	1.54	.746	.888	.7875	1.20
1.62	.318	.397	1.516	.748	.888	.795	1.19
1.61	.320	.400	1.500	.750	.888	.800	1.19
1.60	.323	.404	1.477	.752	.888	.8075	1.18
1.59	.325	.406	1.462	.754	.888	.8125	1.18
1.58	.328	.410	1.439	.756	.887	.820	1.17
1.57	.330	.412	1.424	.758	.887	.825	1.17
1.56	.333	.416	1.402	.760	.887	.8325	1.16
1.55	.335	.419	1.388	.761	.887	.8375	1.16
1.54	.338	.422	1.367	.763	.886	.845	1.16
1.53	.340	.425	1.353	.765	.886	.850	1.15
1.52	.343	.429	1.332	.767	.886	.8575	1.15
1.51	.345	.431	1.319	.768	.885	.8625	1.14
1.50	.348	.435	1.299	.770	.885	.870	1.14
1.49	.350	.437	1.286	.771	.885	.875	1.14
1.48	.353	.441	1.266	.773	.885	.8825	1.13

$\delta = 0,8$

α	ξ_u	ϕ_u	ϕ_u'	φ	q	Cu
.355	.444	1.254	.775	.885	.8875	1.13
.358	.447	1.235	.777	.884	.895	1.12
.360	.450	1.222	.778	.884	.900	1.12
.363	.454	1.204	.780	.884	.9075	1.12
.363	.456	1.192	.781	.884	.9125	1.11
.368	.460	1.174	.783	.883	.920	1.11
.370	.462	1.162	.784	.883	.925	1.11
.373	.466	1.145	.786	.883	.9325	1.10
.375	.469	1.135	.787	.882	.9375	1.10
.378	.472	1.116	.788	.882	.945	1.10
.380	.475	1.105	.789	.882	.950	1.09
.383	.479	1.089	.791	.882	.9575	1.09
.385	.481	1.078	.792	.881	.9625	1.09
.388	.485	1.062	.794	.881	.970	1.08
.390	.488	1.051	.795	.881	.975	1.09
.393	.491	1.036	.796	.881	.9825	1.07
.395	.494	1.025	.797	.881	.9875	1.07
.398	.497	1.01	.799	.880	.995	1.07
.400	.500	1.0	.800	.88	1.0	1.07
.403	.504	.985	.801	.880	1.0075	1.06
.405	.506	.975	.802	.879	1.0125	1.06
.408	.510	.961	.804	.879	1.02	1.06
.410	.513	.951	.805	.879	1.025	1.05
.413	.516	.937	.806	.879	1.0325	1.05
.415	.519	.928	.807	.878	1.0375	1.05
.418	.523	.914	.809	.878	1.045	1.04
.420	.525	.905	.810	.878	1.05	1.04
.423	.529	.891	.811	.878	1.0575	1.04
.425	.531	.882	.812	.878	1.0625	1.04
.428	.535	.869	.813	.877	1.07	1.03
.430	.538	.860	.814	.877	1.075	1.03
.433	.541	.848	.815	.877	1.0825	1.03
.435	.544	.839	.816	.877	1.0875	1.02
.438	.547	.826	.817	.876	1.095	1.02
.440	.550	.818	.818	.876	1.1	1.02
.443	.554	.806	.819	.876	1.1075	1.02
.445	.556	.798	.820	.875	1.1125	1.01
.448	.560	.786	.821	.875	1.12	1.01
.450	.563	.778	.822	.875	1.125	1.01
.453	.566	.766	.823	.875	1.1325	1.00
.455	.569	.758	.824	.875	1.1375	1.00
.458	.573	.747	.825	.874	1.145	1.00
.460	.575	.739	.826	.874	1.15	1.00
.463	.579	.728	.827	.874	1.1575	.990
.465	.581	.720	.828	.874	1.1625	.99
.468	.585	.709	.829	.873	1.17	.99
.470	.587	.702	.830	.873	1.175	.99
.473	.591	.691	.831	.873	1.1825	.98
.478	.597	.674	.833	.872	1.195	.98
.480	.600	.667	.833	.872	1.200	.98
.483	.604	.656	.834	.872	1.2075	.97
.485	.606	.649	.835	.871	1.2125	.97
.488	.610	.639	.836	.871	1.220	.97
.490	.613	.633	.837	.871	1.225	.97
.495	.619	.616	.838	.871	1.2375	.96
.498	.623	.606	.840	.870	1.245	.96
.500	.625	.600	.840	.870	1.25	.96
.530	.663	.509	.849	.867	1.325	.93
.550	.688	.455	.855	.865	1.375	.92

LAMPIRAN I
FAKTOR KONVERSI UNTUK SATUAN

Keterangan	satuan "US Customary"	satuan SI		satuan MKS	
		satuan	faktor pengali	satuan	faktor pengali
panjang	inch	cm	2,54	cm	2,54
	ft	m	0,3048	m	0,3048
luas:	$inch^2$	cm^2	6,4516	cm^2	6,4516
	ft^2	m^2	0,0929030	m^2	0,0929030
volume:	$inch^3$	cm^3	16,387064	cm^3	16,387064
	ft^3	m^3	.0283168	m^3	0,0283168
berat	lb	N(=Newton)	4,5	kgf	0,454
density	lb/ft^3	kg/m^3	16,0185	kg/m^3	16,0185
	lb/in^3	kg/m^3	0,276799	kg/m^3	0,276799
beban	lb/ft	N/m	14,6	kgf/m	1,48816
	lb/ft^2	Pa(=Pascal)	47,9	kg/cm^2	0,000488
tegangan	Psi	KPa =kiloPascal)	6,9	kgf/cm^2	0,07
Gaya	lbf	N	4,44822	kgf	0,454

Tambahan:

(1) 1Pa = $1N/m^2$

(2) $1kgf/m^2$ = 9,80665 N/m^2

(3) 1 lb/in^2 = 689,76N/m^2

(4) 1 Mpa = 1000kPa=145Psi

(5) 1 kPa = 1000Pa

Catatan: maksudnya faktor pengali.

misal 1 Psi=6,9 kPa =0,07 kgf/cm^2

DAFTAR HARGA SATUAN BAHAN BANGUNAN
UNTUK BULAN : JUNI – JULI 1997/1998.
SUMBER DATA : PASARAN BEBAS
DAERAH : SEMARANG dan SEKITARNYA

No	JENIS BAHAN			SATUAN	HARGA MINIMUM (Rp.)	MAKSIMUM (Rp.)	KETERANGAN
1	2			3	4	5	6
I. BAHAN DASAR							
1.	BATU KALI	Bulat utuh		m3	10.000	12.000	
		Bulat belah		m3	16.000	18.000	
		Pecah	5 / 7	m3	17.000	20.000	
		Pecah	3 / 5	m3	18.000	21.000	
		Pecah	2 / 3	m3	20.000	22.000	
2.	KERIKIL	Timbun		m3	21.000	22.000	
		Sawur/koral		m3	23.000	25.000	
		Beton		m3	17.500	19.500	
		Biasa		m3	10.000	11.000	
		Trasc giling		m3	32.000	33.000	
3.	BATU MERAH/BATA		Kwalitet II	bh	50	60	
			Kwalitet I	bh	60	65	
4.	PASIR	Urug		m3	8.000	9.500	
		Pasang	(bodri)	m3	12.000	17.000	
		Beton	(muntilan)	m3	21.000	22.000	
		Tanah padas		m3	7.000	7.500	
5.	KAPUR	Pasang		m3	28.000	30.000	
		Sirih		m3	45.000	50.000	
6.	PORTLAND CEMENT		Nusantara	zak	9.500	9.750	
			Cibinong	zak	9.500	9.750	
			Tiga roda	zak	9.500	9.750	
			Gresik	zak	9.500	9.750	
			White cement	zak	19.000	22.000	
II. BAHAN PENUTUP ATAP							
1.	SIRAP	(100 LEMBAR)		pak	25.000	30.000	
2.	GENTENG BETON						
	Genteng Beton Warna standart			bh	1.800	2.000	
	Genteng Beton Warna Special			bh	1.900	2.250	
	Genteng Beton Warna Khusus			bh	2.000	2.500	
	Kerpus Warna Standart			bh	2.600	3.000	
	Kerpus Warna Special			bh	2.700	3.250	
	Kerpus Warna Khusus			bh	2.800	3.500	
3.	GENTENG TANAH LIAT						
	Vlaam			bh	250	350	
	Kodok			bh	300	500	
	Nok kerpus			bh	400	700	
4.	GENTENG KACA						
	Vlaam	tebal	2 mm	bh	1.000	1.250	
	Vlaam	tebal	3 mm	bh	1.500	2.000	
	Kodok	tebal	2 mm	bh	2.250	2.500	
	Kodok	tebal	3 mm	bh	2.500	3.000	
5.	ASBES GELOMBANG BESAR						
	Djabes 6 1/2						
	. 200 cm X 110 cm X 5 mm			bh	20.000	22.500	
	. 250 cm X 110 cm X 5 mm			bh	24.000	25.500	
	. 225 cm X 110 cm X 5 mm			bh	21.000	23.000	
	. 200 cm X 110 cm X 6 mm			bh	23.500	24.500	
	. 225 cm X 110 cm X 6 mm			bh	26.000	27.500	
	. 250 cm X 110 cm X 6 mm			bh	27.750	28.750	

1	2		3	4	5	6
	Djabes 14 (Asbes Gelombang Kecil)					
	. 150 cm X 105 cm X 4 mm		bh	11.500	12.000	
	. 180 cm X 105 cm X 4 mm		bh	12.000	12.500	
	. 210 cm X 105 cm X 4 mm		bh	16.500	17.500	
	. 240 cm X 105 cm X 4 mm		bh	18.750	19.500	
	. 270 cm X 105 cm X 4 mm		bh	21.000	22.500	
	. 300 cm X 105 cm X 4 mm		bh	23.500	24.500	
6.	ASBES PLAT					
	Djabes Plat					
	. 100cm X 100 cm X 3 mm		lbr	3.500	4.500	
	. 30 cm X 200 cm X 3 mm		lbr	2.500	2.900	
	. 40 cm X 200 cm X 3 mm		lbr	3.000	. 4.000	
	. 50 cm X 200 cm X 3 mm		lbr	3.500	4.800	
	Jabes nok					
	. Kerpus Genteng		pcs	6.250	6.800	
	. Stel genteng		pcs	13.000	13.500	
	. Paten Besar	105 cm	pcs	7.500	8.500	
	Nokstel gelombang harflex					
	. Stel Besar	110 cm	pcs	15.500	17.000	
	. Patent Besar	110 cm	pcs	13.750	14.500	
	. Plat besar	110 cm	lbr	14.500	15.250	
7.	FIBRE GLASS (JABES)					
	180 X 92 cm		lbr	23.500	24.250	
	200 X 92 cm		lbr	30.500	31.250	
	250 X 92 cm		lbr	34.500	35.250	
	180 X 105 cm		lbr	21.200	21.950	
	210 X 105 cm		lbr	23.800	24.550	
	250 X 105 cm		lbr	32.500	33.250	
8.	SENG PLAT					
	BJLS 0,18		lbr	9.200	9.950	
	BJLS 0,20		lbr	10.500	11.250	
	BJLS 0,28		lbr	12.500	13.250	
	BJLS 0,30		lbr	13.800	14.550	
9.	SENG GELOMBANG					
	BJLS 0,18 panjang 180 cm		lbr	9.500	10.250	
	BJLS 0,20 panjang 180 cm		lbr	7.500	8.250	
	BJLS 0,30 panjang 180 cm		lbr	11.000	11.750	
	BJLS 0,40 panjang 180 cm		lbr	15.500	16.250	
III.	BAHAN KAYU					
1.	JATI	Papan	m3	2.500.000	4.500.000	semua ukuran
		Balok/pesagen	m3	1.900.000	4.250.000	semua ukuran
2.	KAMPER	Papan	m3	1.200.000	1.250.000	semua ukuran
		Balok	m3	1.000.000	1.150.000	semua ukuran
3.	KRUWING	Papan	m3	600.000	650.000	semua ukuran
		Balok	m3	525.000	575.000	semua ukuran
4.	MERANTI	Papan	m3	500.000	550.000	semua ukuran
		Balok	m3	425.000	450.000	semua ukuran
5.	LANAN	Papan	m3	195.000	200.000	
		Balok	m3	185.000	190.000	
6.	DOLKEN					
	Sedang 8 x 10 x 400 cm		btg	4.500	5.000	
	Keoil 6 x 7 x 400 cm		btg	3.000	4.000	
	Besar 10 x 12 x 400 cm		btg	4.000	4.500	
	Kayu cetakan		btg	55.000	60.000	
	Kayu bakar		m3	8.000	9.000	
7.	BENGKIRAI	Papan	m3	700.000	725.000	
		Balok	m3	625.000	650.000	

1	2			3	4	5	6
IV. BAHAN PENUTUP DINDING / LANTAI							
1.	UBIN (TEGEL BIASA)						
	PC polos	30 X 30 cm		m2	4.000	5.000	
		20 X 20 cm		m2	3.500	4.000	
	PC warna	30 X 30 cm		m2	7.500	8.000	
		20 X 20 cm		m2	5.000	6.000	
	Teraso	30 X 30 cm		m2	15.000	19.000	
		20 X 20 cm		m2	11.000	14.000	
2.	TEGEL PLINT						
	PC warna	10 X 20 cm		bh	200	250	
	Teraso			bh	600	700	
3.	POLIS UBIN	Lantai/badan		m2	1.250	1.500	
		Plint		m'	550	650	
		Trap		m'	800	900	
4.	PASANG ALDAS DECORATIVE STONE			m2	2.500	2.750	
5.	UBIN PORSELIN						
	Lokal	11 X 11	putih	dos	10.000	12.000	
		11 X 11	warna	dos	15.000	16.000	
	Lokal	15 X 15	putih	dos	14.500	15.000	
		15 X 15	warna	dos	19.500	20.000	
6.	MOZAIK PORSELIN						
	10 X 20 cm	(diamond)		m2	10.000	14.200	
	15 X 15 cm	(diamond)		m2	11.500	15.200	
	20 X 20 cm	(diamond)		m2	12.000	15.200	
	20 X 25 cm	(diamond)		m2	13.000	19.500	
7.	Keramik	30 X 30 cm		m2	12.000	15.000	
8.	VINYL (Rol—rol an	1 x 2 m)		m'	6.000	8.000	
9.	KARPET	Classic Ball		m2	39.000	41.000	
	lbr 4 m	Nobel Long Life		m2	42.000	43.000	
		Classic Hercules		m2	85.000	86.000	
V. BAHAN CETAK							
1.	BUIS BETON	0 10 cm – 100 cm		bh	4.000	5.000	
		0 20 cm – 100 cm		bh	6.500	7.000	
		0 30 cm – 100 cm		bh	10.500	11.250	
		0 50 cm – 100 cm		bh	20.000	21.000	
		U 10 cm – 100 cm		bh	3.000	3.500	
		U 15 cm – 100 cm		bh	4.000	4.500	
		U 20 cm – 100 cm		bh	5.000	5.500	
		U 30 cm – 100 cm		bh	6.500	7.000	
		U 50 cm – 100 cm		bh	10.000	11.000	
2.	LUBANG ANGIN (ROSTER) PC + PASIR					750	
		10 X 20 cm		bh	200	950	
		20 X 20 cm		bh	550	1.300	
		25 X 25 cm		bh	800	1.550	
		30 X 30 cm		bh	1.000	1.750	
		15 X 25 cm		bh	500	1.250	
		15 X 30 cm		bh	575	1.325	
VI. BAHAN BESI							
1.	BESI BETON	0 4 mm – 12 m		btg	2.000	2.500	
		0 6 mm – 12 m		btg	3.500	4.000	
		0 8 mm – 12 m		btg	4.250	4.500	
		0 10 mm – 12 m		btg	7.000	7.500	
		0 12 mm – 12 m		btg	10.500	11.500	
		0 16 mm – 12 m		btg	16.625	17.375	
		0 19 mm – 12 m		btg	23.450	24.200	
		0 25 mm – 12 m		btg	40.425	41.175	

1	2		3	4	5	6
2.	BESI PLAT					
	3 ' X 6 ' tebal 0,6 mm		lbr	13.000	13.750	
	4 ' X 6 ' tebal 0,8 mm		lbr	30.000	35.000	
	4 ' X 8 ' tebal 1,4 mm		lbr	46.500	47.500	
3.	BESI PROFIL					
	Kanal UNP – 10 cm		btg	40.000	45.000	
	Kanal UNP – 12 cm		btg	65.000	70.000	
	Kanal UNP – 15 cm		btg	125.000	130.000	
	Kanal UNP – 20 cm		btg	180.000	190.000	
	Kanal IWF – 15 cm		kg	1.250	1.500	
	Kanal INP – 20 cm		kg	1.600	1.750	
4.	JARING – JARING BAJA					
	Diameter	4 – 15	kg	1.200	1.500	
	Diameter	6 – 15	kg	1.250	1.500	
5.	BESI SIKU	L 40 X 40 X 4	btg	11.000	11.500	
		L 50 X 50 X 5	btg	17.000	17.500	
		L 60 X 60 X 6	btg	26.500	27.000	
6.	KAWAT – Ikat beton/bendrat		kg	2.500	3.000	
	– Harmonika 12 X 45 mm		m2	2.000	4.000	
	– Harmonika 12 X 24 mm		m2	6.000	5.500	
	– Harmonika 14 X 30 mm		m2	6.500	7.000	
	– Harmonika 14 X 35 mm		m2	8.000	8.500	
	– Saringan pasir		m2	4.000	5.000	
	– Kawat loket		m2	4.000	5.000	
	– Kawat duri		rol	14.000	14.500	
VII.	BAHAN PIPA					
1.	PIPA PVC – Diameter	1/2 "	btg	4.000	6.000	
	– Diameter	3/4 "	btg	6.000	7.500	
	– Diameter	1 "	btg	5.500	10.800	
	– Diameter	2 "	btg	16.000	27.200	
2.	KNEE PVC – Diameter	1/2 "	bh	200	250	
	– Diameter	3/4 "	bh	250	300	
	– Diameter	1 "	bh	275	375	
3.	PIPA GALVANIZED			STR	MEDIUM	
	Diameter	1/2" – 6 m	btg	8.500	13.500	
	Diameter	3/4" – 6 m	btg	10.000	12.500	
	Diameter	1" – 6 m	btg	14.000	17.000	
	Diameter	1 1/2" – 6 m	btg	22.000	27.000	
	Diameter	2" – 6 m	btg	27.500	32.000	
	Diameter	2 1/2" – 6 m	btg	42.000	47.000	
	Diameter	3" – 6 m	btg	45.000	52.000	
	Diameter	4" – 6 m	btg	65.000	73.000	
4.	PIPA MEDIUM					
	Diameter	3" – 6 m	btg	80.000	85.500	
	Diameter	4" – 6 m	btg	125.000	130.000	
VIII.	BAHAN LANGIT – LANGIT					
1.	AKUSTIK – ukuran :	30 X 30	lbr	2.000	4.000	
		30 X 60	lbr	4.500	5.000	
		40 X 40	lbr	6.000	7.000	
2.	SOFT BOARD – ukuran :	4'X 8'	lbr	13.000	14.500	
3.	HARD BOARD – ukuran :	4'X 8'	lbr	6.000	7.000	
4.	PLY WOOD					
	Teak wood					
	. 90 X 210	X 3 mm	lbr	13.000	14.000	

1	2		3	4	5	6
	. 120 X 240	X 3 mm	lbr	17.000	18.000	
	. 90 X 210	X 4 mm	lbr	14.500	15.000	
	. 90 X 210	X 9 mm	lbr	21.000	24.000	
	. 90 X 210	X 12 mm	lbr	28.500	30.000	
	. 90 X 210	X 15 mm	lbr	33.000	37.500	
	. 90 X 210	X 18 mm	lbr	39.000	42.000	
	Tripleks					
	. 120 X 240	X 3 mm	lbr	9.500	10.000	
	. 120 X 240	X 4 mm	lbr	13.000	14.000	
	. 120 X 240	X 6 mm	lbr	18.000	19.000	
	Multipleks					
	. 120 X 240	X 9 mm	lbr	29.000	30.000	
	. 120 X 240	X 12 mm	lbr	34.000	35.000	
	. 120 X 240	X 15 mm	lbr	43.000	44.000	
	. 120 X 240	X 18 mm	lbr	47.500	48.500	
IX. BAHAN FINISHING						
1. KAYU						
	Menie		kg	3.500	4.500	
	Dempul plamur		kg	3.000	5.000	
	Ambril/amplas		lbr	350	400	
	Batu Apung		bh	250	500	
	Cat					
	. Toyo		kg	6.500	7.000	
	. Yunlor 66 (nippon paint)		kg	4.750	5.000	
	. Primalin		ltr	1.750	2.000	
	. Deculux		kg	3.500	4.000	
	. Siralax		ons	1.900	2.500	
	. Spiritus		ltr	1.200	1.500	
	. Pilitur jadi		ltr	4.800	5.200	
	. Herotex		ltr	2.000	2.250	
2. TEMBOK						
	Kalkarium		kg	500	600	
	Kapur sirih		kg	200	300	
	Plamur	Toto	kg	2.000	3.000	
		Decolith	5kg	8.000	9.000	
	Kimek	(Nippon paint)	5 kg	6.250	9.000	
	Matek	(Nippon paint)	5 kg	8.400	9.000	
	Toto		5 kg	8.800	17.000	
	Catylac		5 kg	11.750	12.000	
	Mowilex		5 kg	38.000	41.000	
3. BESI						
	Menie	Patana	kg	3.500	4.500	
	Cat	Beebrand	kg	6.000	6.500	
		Toyo paint	kg	4.000	5.000	
	Thinner A		ltr	2.400	2.700	
	Minyak cat		ltr	1.800	2.250	
	Thinner Super		ltr	2.500	3.000	
4. LAIN–LAIN						
	Residu (teer/aspal)		drum	97.000	120.000	
	Fibre glass (tanki air)					
	kapasitas 550 liter.		bh	162.000	180.000	
X. BAHAN KACA						
1. POLOS	Tebal :	2 mm	m2	8.500	9.000	
		3 mm	m2	11.000	11.500	
		5 mm	m2	13.500	14.000	
		6 mm	m2	19.000	22.000	
		8 mm	m2	31.000	35.000	

1	2			3	4	5	6
2. ES KABUR	Tebal :	2 mm		m2	7.500	8.000	
		3 mm		m2	12.500	13.000	
		5 mm		m2	18.000	18.500	
3. RAY BAND	Tebal :	3 mm		m2	15.000	16.500	
		5 mm		m2	19.500	20.500	
		8 mm		m2	47.500	48.500	
		10 mm		m2	53.500	55.000	
XI. BAHAN INSTALASI LISTRIK							
1. KABEL LISTRIK							
NYN : .	1 X 1 1/2 mm			m'	290	300	
.	1 X 2 1/2 mm			m'	480	500	
.	1 X 4 mm			m'	760	700	
NYY : .	2 X 1 1/2 mm			m'	1.100	1.200	
.	2 X 2 1/2 mm			m'	1.700	2.000	
.	2 X 4 mm			m'	2.300	2.500	
2. SKAKELAR							
– Out bauw .	Seri		(broco)	bh	1.200	1.400	
.	Engkel		(broco)	bh	800	1.000	
In bauw .	Seri		(broco)	bh	1.700	1.800	
.	Engkel		(broco)	bh	1.200	1.500	
3. FUSE BOX (SEKERING KASA)							
1 group				bh	4.500	5.000	
2 group				bh	7.500	8.000	
3 group				bh	10.500	11.000	
4. STEKER – Biasa (tunggal)				bh	350	400	
– Double				bh	225	300	
– Kombinasi kecil				bh	150	250	
– Kombinasi besar				bh	850	900	
– T				bh	500	600	
– T dengan arder				bh	2.000	2.200	
XII. ALAT – ALAT PENGUNCI & PENGGANTUNG							
1. KUNCI TANAM	Union :	1 X slag		bh	7.500	9.000	
		2 X slag		bh	10.000	12.000	
	Yale :	1 X slag		bh	6.000	7.000	
		2 X slag		bh	17.500	18.000	
	Kuda :	1 X slag		bh	8.000	9.000	
		2 X slag		bh	9.750	11.000	
2. ENGSEL DAN GERENDEL							
Kupu–kupu biasa				bh	650	750	
Nylon kupu–kupu				bh	900	1.000	
Espagnoled – dalam negeri				bh	5.500	6.500	
Grendel Tanam luar negeri				bh	12.500	9.000	
XIII. BAHAN SANITAIR					(MERK INA)		
1. KLOSET DUDUK	Type C – 4			bh	390.000	425.000 dg pembilas	
	Type C – 5			bh	490.000	530.000 dg pembilas	
	Type C – 13 T			bh	80.000	115.000 dg pembilas	
	Type C – 14 T			bh	80.000	115.000 dg pembilas	
	Type C – 27			bh	925.000	1.025.000 dg pembilas	
2. KLOSET JONGKOK	Type C – 1			bh	40.000	52.000	
	Type C – 2			bh	30.000	40.000	
	Type C – 3			bh	270.000	285.000 dg pembilas	
3. WASTAFEL PEDESTAL 7,5 liter							
Type L –266 Wdk – 23 p				bh	570.000	625.000 dg kran air	
Type L –266G–Wsk – 1 p				bh	370.000	425.000 dg kran air	
4. WASTAFEL MEJA OVAL							
Type L –2594 WMK–38M				bh	600.000	645.000 dg kran air	
Type L –2394 WMK–38M				bh	485.000	520.000	

1	2	3	4	5	6
	Type L –2296 WMK–38M	bh	565.000	600.000	
	5. WASTAFEL GANTUNG BULAT				
	Type L –286 WMK–38M	bh	470.000	485.000	body only
	Type L –284 WMK–38M	bh	470.000	485.000	body only
	6. WASTAFEL GANTUNG SUDUT				
	Type L –143	bh	44.000	77.000	body only
	7. WASTAFEL GANTUNG SUDUT KECIL				
	Type L –80	bh	40.000	46.000	body only
	8. WASTAFEL BAK CUCI				
	640x130x65 mm / Type H–401	bh	35.000	40.000	body only
	9. TEMPAT SABUN GANTUNG				
	210x110x 45 mm / Type H–411	bh	16.000	19.000	
	110x110x 45 mm / Type H–412	bh	11.000	13.500	
	10. TEMPAT SABUN TANAM				
	109x109x 95 mm / Type H– 25	bh	5.000	6.500	
	220x109x 90 mm / Type H– 27	bh	10.000	12.500	
	11. SEPTIC TANK (ETERNIT GRESIK)				
	5 Pemakai 500 liter	unit	115.000	120.000	
	10 Pemakai 1.000 liter	unit	147.000	150.000	
	XIV. ALAT PENGIKAT KAYU				
	1. MUR BAUT (kuda–kuda)	kg	2.000	3.000	
	2. PAKU – ukuran 1" s/d 4"	kg	1.500	2.000	
	3. PAKU – payung	kg	2.000	2.500	
	4. PAKU – sekrup	gros	1.250	2.500	
	5. PAKU – beton	kg	1.500	2.000	
	XV. LAIN – LAIN BAHAN				
	1. POMPA AIR TANGAN				
	Dragon buatan Korea	bh	45.000	50.000	
	Dragon buatan Jepang	bh	100.000	120.000	
	Dragon buatan Indonesia	bh	25.000	40.000	
	2. POMPA AIR LISTRIK				
	Sanyo 100 watt	bh	250.000	295.000	
	Fuji 250 watt	bh	130.000	140.000	
	Shimizu . 100 watt	bh	170.000	190.000	
	. 90 watt	bh	150.000	175.000	
	Dab . 125 watt	bh	110.000	120.000	aqua 125 A
	. 175 watt	bh	200.000	210.000	aqua 175 A
	. 200 watt	bh	200.000	210.000	minijet 101A
	. 250 watt	bh	300.000	320.000	autosub 250
	. 375 watt	bh	541.000	545.000	aquajet 375A
	. 500 watt	bh	835.000	845.000	aquajet 501A
	XVI. PAVING BLOCK				
	1. SQUARE Abu–abu	bh	90	100	
	Merah/hitam	bh	135	145	
	2. HOLLAND Abu–abu	bh	175	190	
	Merah/hitam	bh	245	260	
	3. UNIDECOR Abu–abu	bh	230	250	
	Merah/hitam	bh	320	340	
	4. U N I Abu–abu	bh	220	240	
	Merah/hitam	bh	305	325	
	5. TRIHEX Abu–abu	bh	180	200	
	Merah/hitam	bh	225	275	
	6. OLYMPIA HEXA Abu–abu	bh	325	355	
	Merah/hitam	bh	450	480	
	7. HEXAGONAL Abu–abu	bh	300	330	
	Merah/hitam	bh	420	450	

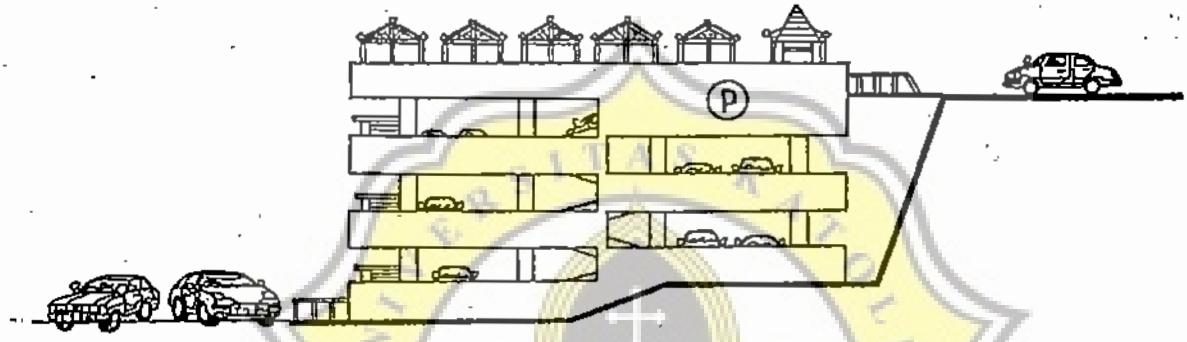
1	2		3	4	5	6
8.	CASTLE	Abu–abu	bh	850	1.150	
		Merah/hitam	bh	1.300	1.700	
9.	TRAPEZ	Abu–abu	bh	480	520	
		Merah/hitam	bh	660	700	
10.	TRAPEZ GRASS BLOCK					
		Abu–abu	bh	480	520	
		Merah/hitam	bh	660	700	
11.	STANDARD GRASS BLOCK	Abu–abu	bh	2.695	3.085	
12.	BATACO		bh	600	710	
XVII.	L A I N – L A I N					
1.	KREI 25 MM		m2	22.500	27.500	
2.	Sliding Pintu J3		btg	17.000	19.500	
	Sliding Pintu J4		btg	20.000	24.500	
	Sliding Pintu J5		btg	25.000	28.500	
3.	Naco per Daun		bh	1.000	2.000	
4.	Rolling door Besi		m2	27.500	30.000	
	Rolling door Almunium		m2	55.000	60.000	
5.	Awning Almunium		m2	14.000	16.000	
6.	Kusen Almunium 4" Putih		m'	15.000	16.500	
	Kusen Almunium 4" Coklat		m'	16.500	18.500	
	Kusen Almunium 3" Putih		m'	13.500	14.500	

BIC–PINPU

DAFTAR HARGA SATUAN UPAH TENAGA KERJA
UNTUK BULAN : JUNI – JULI 1997/1998.
SUMBER DATA : PASARAN BEBAS
DAERAH : SEMARANG dan SEKITARNYA

No	URAIAN	KODE	UPAH MINIMUM (Rp.)	UPAH MAKSIMUM (Rp.)	KETERANGAN
01.	Pekerja	A(1)/hr	6.000	6.500	
02.	Mandor	A(2)/hr	6.000	6.500	
03.	Tukang listrik	A(3)/hr	6.000	7.000	
04.	Tukang kayu	A(4)/hr	7.000	8.000	
05.	Kep. tk. kayu	A(5)/hr	8.000	9.000	
06.	Tukang batu	A(6)/hr	7.000	7.500	
07.	Kep. tk. batu	A(7)/hr	7.500	8.000	
08.	Tukang besi	A(8)/hr	7.000	7.500	
09.	Kep. tk. besi	A(9)/hr	7.500	8.000	
10.	Tukang cat	A(10)/hr	7.000	7.500	
11.	Kep. tk. cat	A(11)/hr	7.500	8.000	
12.	Tukang plitur	A(12)/hr	7.000	7.500	
13.	Tukang jalan	A(13)/hr	7.500	8.000	
14.	Tukang gali	A(14)/hr	7.000	7.500	
15.	Tukang masak aspal	A(15)/hr	6.500	7.000	
16.	Tk. leideng	A(16)/hr	6.500	7.000	
17.	Masinis	A(17)/hr	7.000	7.500	
18.	Pemb. Masinis	A(18)/hr	6.500	7.000	
19.	Penjaga api	A(19)/hr	6.000	6.500	

SURAT-SURAT



PERENCANAAN GEDUNG PARKIR

UNIVERSITAS KATOLIK SOEGIJAPRANATA

SEMARANG

JURUSAN TEKNIK SIPIL
FAKULTAS TEKNIK UNIVERSITAS KATOLIK SOEGIJAPRANATA
Jl. Pawiyatan Luhur IV/1 Bendan Dhuwur Semarang-50234
Telp. (024) 316167 - 316142 - 441705 - 441762
Fax. (024) 415429 Po. Box. 8033/SM
Badan Hukum : Yayasan Sandjojo

Nomor : A.48.04/207/UKS.04.2/IV/1997 11 April 1997
Lamp : 1 (satu)lembar
H a l : MOHON TUGAS AKHIR

Kepada : Yth. Bapak. Prof.Ir. Soediro
Dosen Pembimbing Tugas Akhir
Bagi Mahasiswa Jurusan Teknik Sipil
Unika Soegijapranata
S e m a r a n g.

Kami beritahukan dengan hormat, bahwa pada Semester Genap 1996/1997 ada beberapa Mahasiswa Jurusan Teknik Sipil Fakultas Teknik Unika Soegijapranata Semarang yang berhak mendapatkan Tugas Akhir / Desain.

Sehubungan dengan hal tersebut di atas, maka kami mohon kesediaan Bapak berkenan memberikan Tugas Akhir/ Desain bagi mahasiswa terlampir.

Kami beritahukan pula bahwa, penyelesaian tugas dalam waktu 3 (tiga) bulan mulai tugas keluar (diberi tugas). Apabila tidak selesai dapat diperpanjang maximal 3 (tiga) bulan, selebihnya tugas akhir dianggap gugur.

Demikian pemberitahuan kami, atas perhatian dan kerjasama Bapak, diucapkan terimakasih.

Ketua Panitia,

FAKULTAS TEKNIK
JURUSAN TEKNIK SIPIL

IR. IGN. DARMOYO

Tembusan : Yth,

- Asisten Pembimbing Tugas Akhir
- Dekan Fakultas Teknik
- Ka. B A A K

Ytk Bp Ir Budi Setiyadi ME
Harap dibuatkan TA yg tak sama
dgn karya praktiknya.
Trima kasih
Soediro
17/IV 97

hardtugasaki18/rn

Lampiran Surat Nomor :
A.48.04/207/UKS.04.2/IV/97

1. NAMA MAHASISWA : B. TIPLUK JATI ARYANI
   NIM/NIRM : 92.12.962/92.6.111.03010.50029
   JUDUL LAPORAN KERJA PRAKTEK : PEMBANGUNAN PASARAYA SRI RATU EX BAZAR JALAN PEMUDA SEMARANG.

2. NAMA MAHASISWA : SETYOWATI KRISTIAJI
   NIM/NIRM : 92.12.1026/92.6.111.03010.50074
   JUDUL LAPORAN KERJA PAKTEK : PEMBANGUNAN GROUND TANK PADA PROYEK HOTEL CENTRA WONOSOBO PROPINSI JAWA TENGAH.

KETUA PANITIA,

UNIVERSITAS KATOLIK SOEGIJAPRANATA
FAKULTAS TEKNIK
JURUSAN TEKNIK SIPIL

IR. IGN. DARMOYO,

JURUSAN TEKNIK SIPIL
FAKULTAS TEKNIK UNIVERSITAS KATOLIK SOEGIJAPRANATA
Jl. Pawiyatan Luhur IV/1 Bendan Dhuwur Semarang-50234
Telp. (024) 316167 - 316142 - 441705 - 441762
Fax. (024) 415429 Po. Box. 8033/SM
Badan Hukum : Yayasan Sandjojo

Nomor : A.48.04/207/UKS.04.2/IV/1997 11 April 1997
Lamp : 1 (Satu)lembar
H a l : MOHON TUGAS AKHIR

Kepada : Yth. Bapak. Ir. Budi Setiyadi, MT
Asisten Pembimbing Tugas Akhir
Bagi Mahasiswa Juusan Teknik Sipil
Unika Soegijapranata
S e m a r a n g.

Kami beritahukan dengan hormat, bahwa pada Semester Genap 1996/1997 ada beberapa Mahasiswa Jurusan Teknik Sipil Fakultas Teknik Unika Soegijapranata Semarang yang berhak mendapatkan Tugas Akhir / Desain.

Sehubungan dengan hal tersebut di atas, maka kami mohon kesediaan Bapak berkenan memberikan Tugas Akhir/ Desain bagi mahasiswa terlampir.

Kami beritahukan pula bahwa, penyelesaian tugas dalam waktu 3 (tiga) bulan mulai tugas keluar (diberi tugas). Apabila tidak selesai dapat diperpanjang maximal 3 (tiga) bulan, selebihnya tugas akhir dianggap gugur.

Demikian pemberitahuan kami, atas perhatian dan kerjasama Bapak, diucapkan terimakasih.

Ketua Panitia,

FAKULTAS TEKNIK
JURUSAN TEKNIK SIPIL

IR. IGN. DARMOYO

Tembusan : Yth,

- Dekan Fakultas Teknik
- Ka. B A A K

hardtugasakl19/rm

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