

Appendix F

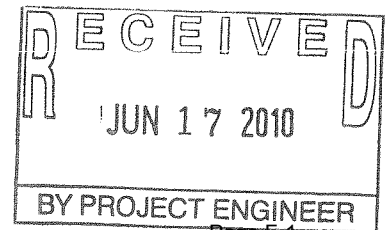
Submittal 551.03 Pile Driving Equipment

Contractor Information

(a) General

Pile Driving operations will be performed by **Bob's Bridge Builders** of **Riggins, ID**.
The operations will be to pre-bore for the pipe piles to a depth of 3' above the estimated pile tip depth of 25'. The depth will be no more than 22' deep. The pre-bore will be the same diameter or smaller than the 14" pipe pile.

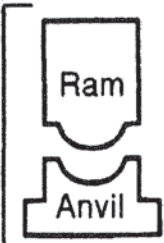


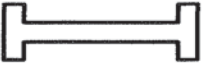
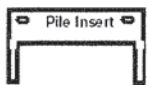

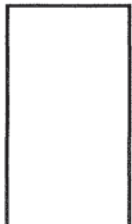
Example



Pile and Driving Equipment Data Form (English)

Note: Use internet to look up manufacture's data for your contractor's equipment

Contract No.: DTFH70-10-C-00204 Structure Name and/or No.: Bridge Over Troubled Water
 Project: Bridge Over Troubled Waters Project
 Piling Driving Contractor: Bob's Bridge Builders
 County: _____

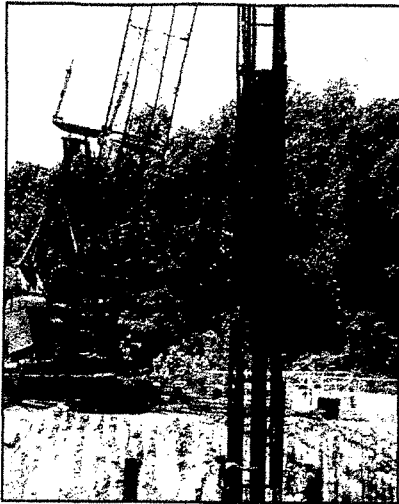
Hammer Components		Manufacturer: <u>Ape</u> Model No.: <u>D19-42</u> Hammer Type: <u>Diesel</u> Serial No.: <u>990952</u> Manufacturers Maximum Rated Energy: <u>47,335</u> (ft-lbs) Stroke at Maximum Rated Energy: <u>10' 2"</u> Range in Operating Energy: <u>22,721</u> to <u>47,335</u> (ft-lbs) Range in Operating Stroke: <u>6</u> to <u>10' 3"</u> (ft) Ram Weight: <u>4,190</u> (lbs) Anvil weight: <u>749 LBS</u> Modifications: <u>None</u>
		Striker Plate Weight: <u>628</u> (lbs) Diameter: <u>22.5</u> (inches) Thickness: <u>6"</u> (inches)
		Material: <u>Monocast MC 904</u> Area: <u>471</u> (in ²) Thickness of Plate: <u>2</u> (in) No. of Plates: <u>1</u> Total Thickness of Hammer Cushion: <u>2</u> (in) Modulus of Elasticity (E): <u>285 ksi</u> (psi) Coefficient of Restitution (e): <u>.80</u>
		Helmet (Drive Head) Weight: <u>1,076</u> (lbs) One Piece Helmet? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
		Pile Insert (Bonnet) Weight of Insert <u>948</u> (lbs) Total Helmet Weight <u>2,652</u> (lbs)
		Material: <u>Manufacturer requires only with concrete pile</u> Area: _____ (in ²) Thickness/Sheet: _____ (in) No. of Sheets: _____ Total Thickness of Pile Cushion: _____ (in)
		Pile Type: <u>14" diameter pipe pile</u> Wall thickness: <u>1/2"</u> (in) Taper: <u>NA</u> Cross Sectional Area: <u>21.21</u> (in ²) Weight/foot: <u>72.09</u> (lbs) Order Length: <u>30</u> (feet) Ultimate Pile Capacity: _____ (tons) Driving Shoe/Closure Plate Description: _____ Description of Splice (If Applicable): <u>NA</u>

Submitted By: Builder Bob, Bob's Bridge Builders Date: 6/1/2010
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This set up will be used on Bents 1, & 2.

APE Model D19-42 Single Acting Diesel Impact Hammer

D19-42 driving H-beam.



MODEL D19-42 (1.9 metric ton ram)

SERIAL # 990952

SPECIFICATIONS

Stroke at maximum rated energy	135 in (343 cm)
Maximum rated energy (Setting 4)	47,335 ft-lbs (64,177 Nm)
Setting 3	37,868 ft-lbs (51,341 Nm)
Setting 2	31,715 ft-lbs (42,999 Nm)
Minimum rated energy (Setting 1)	22,721 ft-lbs (2,567 Nm)

(Variable throttle allows for lower minimum energy and infinite fuel settings.)

Maximum obtainable stroke	150 in (381 cm)
Maximum obtainable energy	52,362 ft-lbs (70,992 Nm)
Speed (blows per minute)	34-52

WEIGHTS

Ram	4,189 lbs (1,900 kg)
Anvil	749 lbs (340 kg)
Anvil cross sectional area	124.42 sq in (316.02 sq-cm)
Hammer weight (includes trip device)	8,400 lbs (3,810 kg)
Typical operating (weight with DB26 and H-beam insert)	11,052 lbs (5,013 kg)

CAPACITIES

Fuel tank (runs on diesel or bio-diesel)	8.3 gal (31.41 liters)
Oil tank	2.3 gal (8.7 liters)

CONSUMPTION

Diesel or Bio-diesel fuel	1.3 gal/hr (6.6 liters/hr)
Lubrication	.13 gal/hr (.49 liters/hr)
Grease	8 to 10 pumps every 45 minutes of operation time.

Optional Variable Throttle.



STRIKER PLATE FOR DB 26

Weight	628 lbs (284 kg)
Diameter	22.5 in (57.15 cm)
Area	471 sq-in (696 sq-cm)
Thickness	6 inches (15.24 cm)

STRIKER PLATE FOR DB 20

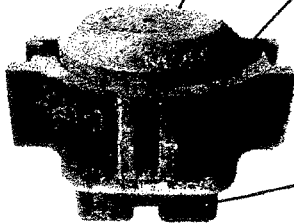
Weight	440 lbs (199 kg)
Diameter	17.3/4 in (45.08 cm)
Area	247 sq-in (628 sq-cm)
Thickness	6 inches (15.24 cm)

CUSHION MATERIAL - ONLY REQ'D

Type	Monocast MC 904
Diameter-DB26	22.5 in (57.15 cm)
Diameter-DB20	17.3/4 in (45.08 cm)
Thickness	2 inches (5.08)
Elastic-modulus	285 ksi (1,965 mpa)
Coeff. of restitution	.8

FOR CONCRETE
PILE.

Drive Base Assembly.



DRIVE CAP

DB 26:	1,076 lbs (488 kg)
DB 20:	750 lbs (340 kg)

INSERT WEIGHT

H-Beam insert for 12" (305 mm) and 14" (355 mm):	948 lbs (430 kg)
Large pipe insert for sizes 12" to 24" diameter:	1,830 lbs (830 kg)

MINIMUM BOX LEAD SIZE/OPERATING LENGTH

Minimum box leader size	8 in x 21 in (3.14 cm x 53.34 cm)
Operating length w/ base and insert	348 in (884 cm)

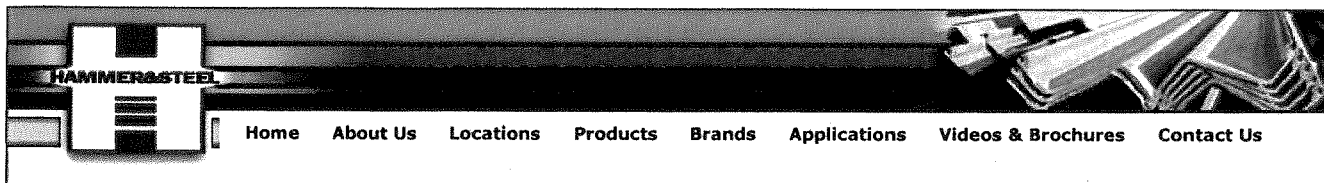


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Note: All specifications are subject to change without notice 1/07.

Example



- ABI
- Delmag
- Diesel Hammers
- Drill Rigs
- Lead Systems
- Attachments
- Bay Shore/LoDrill
- Bruce
- Dawson
- PVE
- Hammer & Steel
- Gerdau Ameristeel
- Boart Longyear
- Junttan
- Scheltzke
- Krupp
- Gamperl & Hatlapa GmbH
- Steel Dynamics
- Soilttek

Bearing Capacity Chart -- Delmag Diesel Pile Hammers

Delmag D19-42 Single Acting Diesel Pile Hammer

Blows Per Min.	Piston Stroke (ft)	Hammer Energy (ft-lbs)	Bearing Capacity (tons) for a Pile Set (blows / in) of :																
			2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
54	4.65	18670	106	117	127	135	142	148	153	158	163	167	171	174	178	181	184	186	189
53	4.84	19433	109	121	130	138	145	152	157	162	167	171	175	179	182	185	188	191	194
52	5.04	20236	112	124	134	142	149	156	161	167	171	176	180	183	187	190	193	196	199
51	5.25	21079	115	128	138	146	154	160	166	171	176	180	184	188	192	195	198	201	204
50	5.47	21962	119	131	142	150	158	164	170	176	181	185	189	193	197	200	203	206	209
49	5.71	22926	122	135	146	155	162	169	175	181	186	190	194	198	202	206	209	212	215
48	5.97	23970	126	139	150	159	167	174	180	186	191	196	200	204	208	211	215	218	221
47	6.24	25054	130	144	155	164	172	179	185	191	196	201	206	210	214	217	221	224	227
46	6.52	26178	134	148	159	169	177	184	191	196	202	207	211	215	219	223	227	230	233
45	6.83	27422	139	153	164	174	182	190	196	202	208	213	217	222	226	230	233	237	240
44	7.16	28747	143	157	169	179	188	195	202	208	214	219	224	228	232	236	240	243	247
43	7.51	30153	148	162	174	185	193	201	208	214	220	225	230	235	239	243	247	250	254
42	7.88	31638	152	168	180	190	199	207	214	221	227	232	237	242	246	250	254	258	261
41	8.29	33284	158	173	186	196	206	214	221	228	234	239	245	249	254	258	262	266	269
40	8.72	35011	163	179	192	203	212	221	228	235	241	247	252	257	262	266	270	274	277
39	9.19	36898	169	185	198	210	219	228	236	243	249	255	260	265	270	274	278	282	286
38	9.70	38946	175	191	205	217	227	235	243	251	257	263	269	274	279	283	287	292	295
37	10.25	41154	181	198	212	224	234	243	252	259	266	272	278	283	288	292	297	301	305
36	10.84	43523	187	205	220	232	242	252	260	268	275	281	287	292	297	302	307	311	315
35	11.48	46092	194	213	227	240	251	261	269	277	284	291	297	302	308	312	317	322	326

REQUEST QUOTE

DOWNLOAD BROCHURES

Calculates bearing capacities based upon FHWA modified Gates formula:

$$R_u = 0.5 [1.75 \sqrt{E (\log 10N) - 100 }]$$

where

R_u = Driven bearing capacity of the pile in tons

N = Number of hammer blows per inch

E = Energy developed by the hammer per blow in ft-lbs

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Example