

From: [Vernon Uy](#)
To: [Green, Frank;](#)
cc: [Daly, Keith; Peppers, Nicki;](#)
Subject: Contract 8078 - Piledriving Equipment & Work Plan submittal
Date: Wednesday, January 26, 2011 6:15:58 PM
Attachments: [PiledrivingEquipment&WorkPlanSubmittal.pdf](#)

Hi Frank.

Attached you'll find our PILEDIVING EQUIPMENT and WORK PLAN submittal. Hard copies are in the mail.

Thanks.

Vernon Uy
American Construction Company, Inc.
(425) 870-3217

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Marine Construction Dredging Pile Driving
 1501 Taylor Way • Tacoma, Washington 98421
 PHONES: Tacoma (253) 254-0118,
 Seattle (206) 623-0114,
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CONTRACTORS LIC NO. 223-01-AM-ER-IC*372 NO.

TO: Columbia River Crossing Project Office
 700 Washington Street, Suite 300
 Vancouver, WA 98660

 Attn: Frank Green, P.E.

DATE January 26, 2011

JOB #: MC 02-11

TITLE: Columbia River Bridge Temporary Pile Test Program (#8078)

THE FOLLOWING ITEMS ARE BEING SENT: Herewith
 Under Separate Cover
 Direct

QUANTITY	DESCRIPTION
4 EA	PILEDIVING EQUIPMENT and WORK PLAN submittal

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- For your approval or corrections

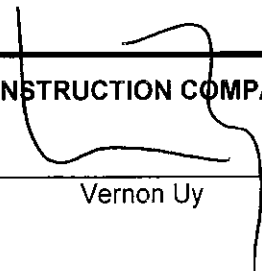
REMARKS:

Please contact us promptly if there is a problem or question

COPY TO:

AMERICAN CONSTRUCTION COMPANY, INC.

BY:



Vernon Uy

**I-5, COLUMBIA RIVER BRIDGE TEMPORARY PILE
TEST PROGRAM - WA 0.3 TO OR MP 308.0
(Contract #8078)**

Pile Driving Equipment and Pile Driving Work Plan

CONTRACTOR:

**American Construction Company, Inc.
1501 Taylor Way
Tacoma, WA 98421**

DATE:

1/26/11

PILE DRIVING EQUIPMENT LIST

The equipment list for the I-5, Columbia River Bridge Temporary Pile Test Program project (Contract #8078) is as follows:

- Floating Crane "Patriot", 180-ton capacity crane on a 70' x 140' x 13'-6" barge, equipped with 2 spuds, deck winches, and 140-ft crane boom
- Flat Deck Barge, 40' x 197' x 15' barge for piling and equipment storage
- Model 400 vibratory driver/extractor (13,000 in-lbs) with 8-ft caisson beam, two (2) Model 200 caisson clamps for driving/extracting pipe piles, and power unit
- D80-42 single-acting diesel impact hammer (198,450 ft-lbs) with offshore leads, helmet to drive 48" OD pipe piles, and power unit
- D19-42 single-acting diesel impact hammer (47,335 ft-lbs) with offshore leads, helmet to drive 24" OD pipe piles, and power unit
- 1600 CFM Air Compressors (3 each)
- 200 CFM Air Compressor (1 each)
- Crewboat "Courage"
- Workskiff, 16-ft boat with 25-HP outboard motor
- F-150 and F-250 pick up trucks
- Welding machine, torch, rigging, small tools

PILE DRIVING WORK PLAN

All piles will come completely spliced to the lengths specified and steel pile tips already attached. Piles will be staged on the flat-deck barge.

All 48" OD and 24" OD pipe piles will be pre-set with the vibratory driver to the maximum penetration practicable, but not deeper than 7 feet above the minimum pile tip elevation specified in the Plans. The piles will then be driven by their respective conventional impact hammer (using offshore leads) to the ultimate bearing capacity shown in the Plans.

The 24" OD piles will be "proofed" using a D19-42 hammer; while the 48" OD piles will be "proofed" using a D80-42 hammer. During impact driving, the specified sound attenuation system will be deployed and used.

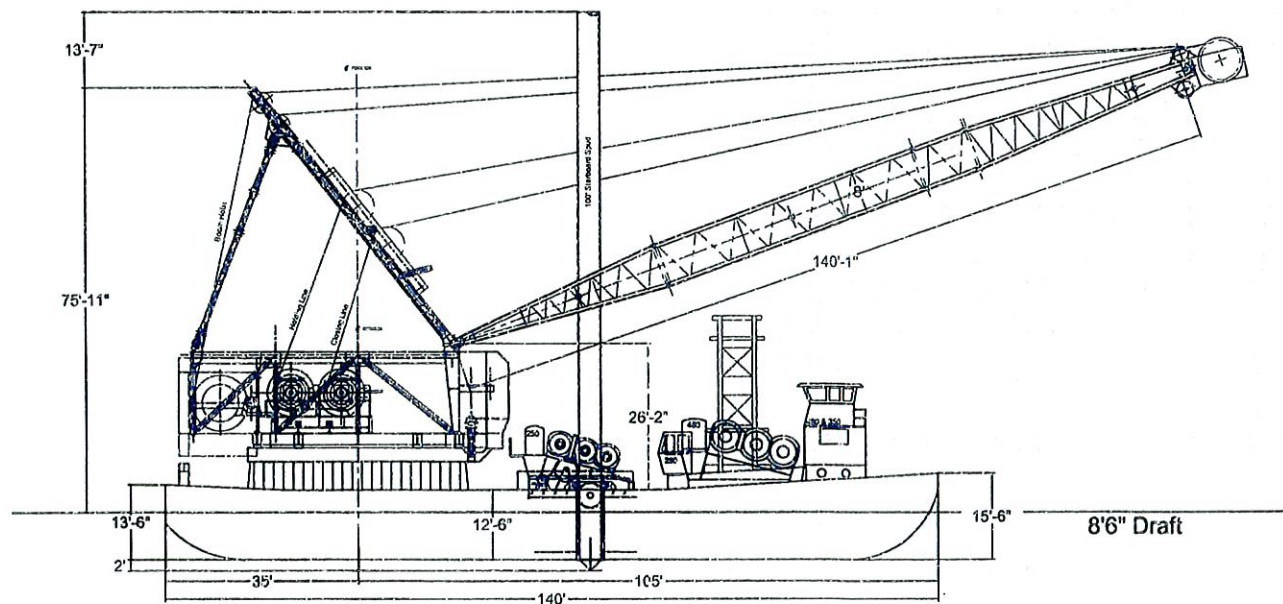
Each pile's location will be surveyed using a surveyor total station. Survey work will be done from the river bank.

Pile Driving Analyzer (PDA) and Case Pile Wave Analysis Program (CAPWAP) will be performed on the piles as indicated in the Plans. Two (2) CAPWAP analyses will be done per test pile: (1) at the end of initial driving, and (2) at restrike after 48-hour setup period.



PATRIOT

- 2ea 100' Spuds
- 3 Winches
- 250 House
- 250 - Starb wires
- Chinook House
- 350 - Bow Anchors
- 480 Port Wires and Spuds
- 180ton capacity full revolving
- 140ft boom
- Clamshell Dredge
- 20yd Digging Bucket
- 34yd Rehandle Bucket
- 2 Bow Anchors
- Galley

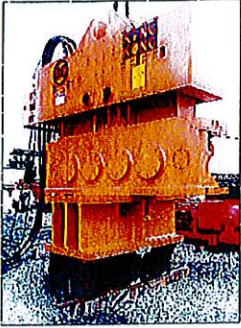


AMERICAN CONSTRUCTION COMPANY
 1501 Taylor Way, Tacoma, WA 98421
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D.B. PATRIOT - OUTBOARD VIEW

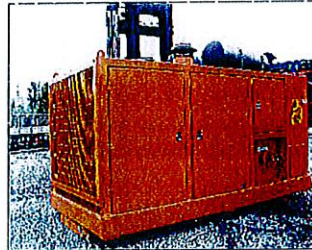
APE Model 400 Vibratory Driver/Extractor



SPECIFICATIONS	DATA
Eccentric moment	13,000 in-lbs (149.78 kgm)
Frequency (variable)	400-1400 vpm
Driving Force	3203 kN / 360 US tons
Amplitude with dual clamps	(dynamic wt: 16,000 lbs.) 40 mm / 1.63 in
Amplitude with Quad Clamps	(dynamic wt: 27,000 lbs.) 32mm / .962 in
Maximum line pull	2,224 kN / 250 US tons
Suspended Weight	(with 17' beam and clamps) 22,226 kg / 49,000 lbs
Suspended Weight	(w/Quad Clamp System & hoses) 27,669 kg / 61,000 lbs
Suspended Weight	(w/sheet clamp & hoses) 17,690 kg / 39,000 lbs
Length	305 cm / 120 in
Width throat	66 cm / 26 in
Width at widest point	66 cm / 26 in
Height with 8' beam and clamps	244 cm / 96 in
Height with Quad Clamp System	280 cm / 110 in
Hydraulic Hose Length (standard)	45 m / 150 ft

APE Model 1050 Power Unit

SPECIFICATIONS	DATA
Power Unit Engine	Caterpillar E-series C27 ACERT
Maximum Power	1050 hp (745kW)
Operating Speed	800 to 2100 rpm
Maximum Drive Pressure	5,000 psi (340 bar)
Drive Flow	0 to 321 gpm (1,219 lpm)
Clamp Pressure	4,800 psi (326 bar)
Clamp Pump Flow @ 2200 rpm	6.5 gpm (27 lpm)
Weight	27,000 lbs (12,247 kg)
Length	169 in (442 cm)
Width	82 in (208 cm)
Height	96 in (244 cm)



APE Model D19-42 Single Acting Diesel Impact Hammer

D19-42 driving H-beam.



MODEL D19-42 (1.9 metric ton ram)

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)
<i>(Variable throttle allows for lower minimum energy and infinite fuel settings.)</i>	
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 (798 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

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 cm)
Elastic-modulus	285 ksi (1,965 mpa)
Coeff. of restitution	.8

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)

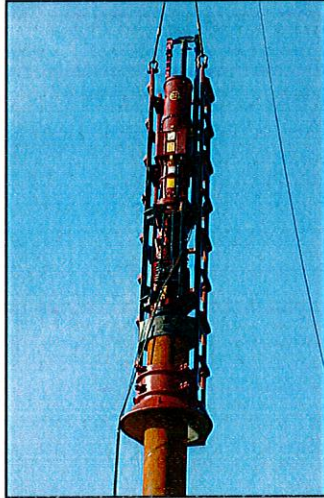


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(253) 872-8710 Fax

Visit our WEB site:
www.apevibro.com
e-mail: ape@apevibro.com

APE Model D80-42 Single Acting Diesel Impact Hammer

D80-42 in an offshore Leader.



MODEL D80-42 (8.0 metric ton ram)

SPECIFICATIONS

Stroke at maximum rated energy	135 in (343 cm)
Maximum rated energy (Setting 4)	198,450 ft-lbs (269,059 Nm)
Setting 3	178,010 ft-lbs (241,346 Nm)
Setting 2	153,203 ft-lbs (207,713 Nm)
Minimum rated energy (Setting 1)	127,206 ft-lbs (172,466 Nm)
<i>(Variable throttle allows for lower minimum energy and infinite fuel settings.)</i>	
Maximum obtainable stroke	157 in (381 cm)
Maximum obtainable energy	231,084 ft-lbs (313,304 Nm)
Speed (blows per minute)	34-53

WEIGHTS

Ram	17,640 lbs (8,000 kg)
Anvil	4,670 lbs (2,118 kg)
Anvil cross sectional area	630.47 sq in (1,601 sq-cm)
Hammer weight (includes trip device)	38,434 lbs (17,433 kg)
Typical operating (weight with 8"x54" offshore)	68,434 lbs (31,4041 kg)

CAPACITIES

Fuel tank (runs on diesel or bio-diesel)	40.3 gal (96.52 liters)
Oil tank	8.3 gal (31 liters)

CONSUMPTION

Diesel or Bio-diesel fuel	6.5 gal/hr (24.6 liters/hr)
Lubrication	.67 gal/hr (1.96 liters/hr)
Grease	8 to 10 pumps every 45 minutes of operation time.

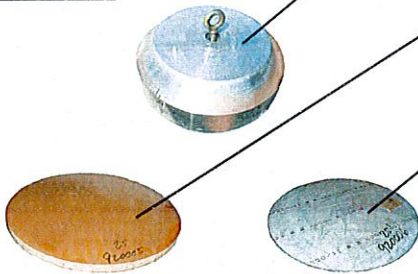
Optional Variable Throttle Control.



25" STRIKER PLATE

Weight	1,036 lbs (470 kg)
Diameter	25 in (57.15 cm)
Area	471 sq-in (696 sq-cm)
Thickness	8 inches (20.32 cm)

Cushion material.



CUSHION MATERIAL

Type/Qty	Micarta/3 ea
Diameter	25 in (57.15 cm)
Thickness	1 in (25.4 mm)
Type/Qty	Aluminum/4 ea
Thickness	1/2 in (12.7 mm)
Diameter	25 in (57.15 cm)
Total Combined Thickness	3.5 inches (8.89 cm)
Area	490 in (1,246 cm)
Elastic-modulus	285 ksi (1,965 mpa)
Coeff. of restitution	.8

Typical 54" offshore.



OFFSHORE LEADER

Offshore for 98"/2.5 meter piles and under	42,000lbs (19,050 kg)
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MINIMUM BOX LEAD SIZE/OPERATING LENGTH

Minimum box leader size	8 in x 37 in (20.32 cm x 94 cm)
Operating length for offshore leader	384 in (9.75 m)



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