



## SUBMITTAL REVIEW FORM

**Project #:** 17181  
**Submittal #:** 17181-SM1  
**Project Description:** Wex Building  
**Location:** Corner of Hancock and Thames St, Portland ME  
**Date Received:** 10/12/2017  
**Date Reviewed:** 10/23/2017

### SHOP DRAWING / SUBMITTAL REVIEW

APPROVED                       APPROVED WITH CHANGES NOTED  
 REVISE AND RESUBMIT       REJECTED: \_\_\_\_\_

SUBMITTAL WAS REVIEWED FOR DESIGN CONFORMITY AND GENERAL CONFORMANCE TO CONTRACT DOCUMENTS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING DIMENSIONS AT JOB SITES FOR TOLERANCES, CLEARANCES, QUANTITIES, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATION OF HIS WORK WITH OTHER TRADES AND FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS.

BY Mark A. Hurler DATE 10/23/17

**SUMMIT GEOENGINEERING SERVICES, INC.**  
145 Lisbon Street, Suite 701  
Lewiston, Maine 04240

*Review and potential approval is based only on general conformance of the submitted documents to the design concept of the project and specifications provided in the Contract Documents. The contractor remains responsible for dimensions and material quantities, which shall be confirmed and correlated in the field. Any revisions shown in this review is subject to the requirements of the project specifications and drawings, and the contractor is responsible to uphold satisfactory fabrication, installation, and performance of the work.*

**H. B. FLEMING, INC.**  
 Contracting & Engineering  
 89 Pleasant Avenue  
 South Portland, ME 04106

**LETTER OF TRANSMITTAL**

10/5/2017

DATE: BRIAN LARSEN  
 ATTENTION

JOB NO.

Phone (207) 799-8514

TO: CAUBRO  
 ATTN: BRIAN LARSEN

RE: WEX BUILDING PILE SUBMITTAL

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

Shop drawings  Prints  Plans  Samples  Specifications  
 Copy of letter  Change order  \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1	10/5/17	1	PILE SUBMITTAL

THESE ARE TRANSMITTED as checked below:

For approval  Approved as submitted  Resubmit \_\_\_\_\_ copies for approval  
 For your use  Approved as noted  Submit \_\_\_\_\_ copies for distribution  
 As requested  Returned for corrections  Return \_\_\_\_\_ corrected prints  
 For review and comment  \_\_\_\_\_  
 FOR BIDS DUE \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS

BRIAN,

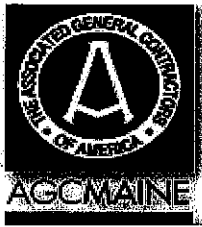
ATTACHED IS OUR PILE SUBMITTAL FOR THE PROPOSED WEX BUILDING.  
 PLEASE GIVE ME A CALL WITH ANY QUESTIONS/CONCERNS

THANKS,  
 JOHN

COPY TO \_\_\_\_\_

SIGNED: *[Signature]*

If enclosures are not as noted, kindly notify us at once.



**H.B. FLEMING, INC.**  
 CONTRACTING · ENGINEERING  
 89 Pleasant Ave. South Portland, ME 04106  
 Phone 207-799-8514 Fax 207-799-8538  
[www.hbfleming.com](http://www.hbfleming.com)



PILE DRIVING

BRIDGES

SUBMARINE PIPELINES

## SUBMITTAL

### Submitted To:

Client: CIANBRO  
 Attention: Brian Larsen

Date: 10/05/2017  
 Project: WEX Building  
 Location: Portland, ME

### Subject: Pile Driving Criteria

H.B. Fleming Proposes to use the following driving criteria for the piles to be installed at the above location.

#### Hammer(s)

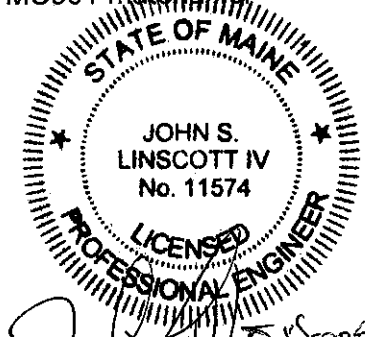
- Either an APE D-19 or an MKT DE 42 may be used for this project. The details for each hammer are listed below respectfully.
- APE D-19 open ended diesel pile hammer may be used to drive the piles. The D-19 has a ram weight of 4,190 lbs, a maximum stroke of 10'-2", and a rated energy of 42,800 ft-lbs.
- MKT DE-42 open ended diesel pile hammer may be used to drive the piles. The DE-42 has a ram weight of 4,200 lbs, a maximum stroke of 10'-6", and a rated energy of 42,000 ft-lbs.
- The hammer cushioning material consists of 2 inches of Monocast MC901 material for both hammers.

#### Pile

- HP10x42 ASTM A572 Gr. 50 material.
- The design capacity is 80 tons.
- The ultimate capacity which our analysis is based on is 160 tons.
- Piles will be fitted with cast steel points.

#### Results

- Piles will be driven until a blow count of 7 blows per inch for three consecutive inches with the MKT DE42, or 5 blows per inch with the APE D19-42 hammer.
- If abrupt refusal is encountered, driving will stop when penetration is less than 1/2" for 7 successive blows with the MKT DE42, or 5 blows for 1/2" of penetration if driven with the D19-42. This criteria applies to both abutments.
- These criteria are based upon the output generated from the WEAP analysis that follows. If testing of the piles indicates different criteria, the test results will be used to determine driving criteria for production piles.



*John S. Linscott IV*  
 "Seal" of PE  
 10/5/17

Signed: \_\_\_\_\_

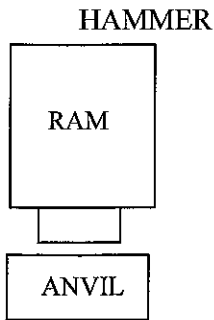
John Allen

## H.B. FLEMING PILE EQUIPMENT DATA SHEET

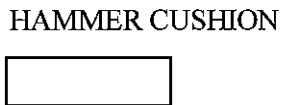
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Project: WEX  
 Location: Portland, ME

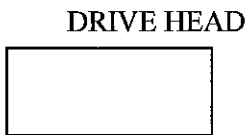
Date: 10/05/2017  
 Client: CIANBRO



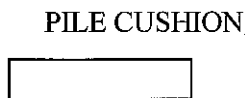
Manufacturer:	APE
Model:	D-19
Type:	Single Acting Diesel
Minimum Drop Height:	10' - 2"
Rated Energy at Drop Height:	42,800 ft-lb
Modifications:	None



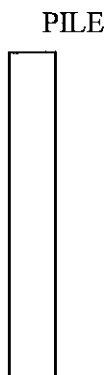
Material:	Monocast MC901
Thickness:	2"
Area:	283.5 in <sup>2</sup>
Modulus of Elasticity:	285 ksi
Coefficient of Restitution:	0.8



Weight:	1200 lb
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Cushion Material:	N/A
Thickness:	N/A
Modulus of Elasticity:	N/A
Coefficient of Restitution:	N/A



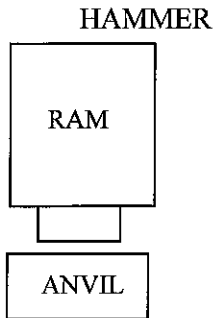
Pile Type:	HP10x42
Length in Leads:	Up to 65'
Weight/LF:	42 lb
Wall Thickness:	0.415"
Taper:	N/A
Cross Sectional Area:	12.4 in <sup>2</sup>
Ultimate Capacity	320 kips
Splice Description:	Full Penetration Butt Weld
Tip Treatment Description:	Cast Steel Point

## H.B. FLEMING PILE EQUIPMENT DATA SHEET

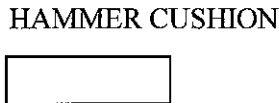
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Project: WEX  
 Location: Portland, ME

Date: 10/05/2017  
 Client: CIANBRO



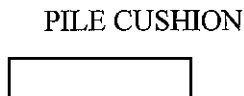
Manufacturer:	MKT
Model:	DE-42
Type:	Single Acting Diesel
Minimum Drop Height:	10' - 6"
Rated Energy at Drop Height:	42,000 ft-lb
Modifications:	None



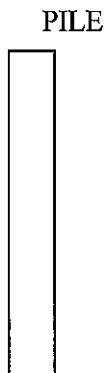
Material:	Monocast MC901
Thickness:	2"
Area:	283.5 in <sup>2</sup>
Modulus of Elasticity:	285 ksi
Coefficient of Restitution:	0.8



Weight:	1200 lb
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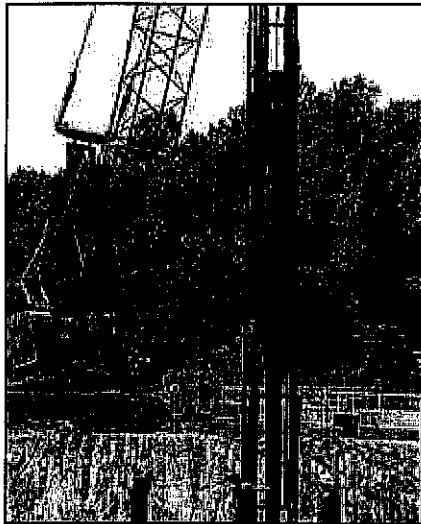
Cushion Material:	N/A
Thickness:	N/A
Modulus of Elasticity:	N/A
Coefficient of Restitution:	N/A



Pile Type:	HP10x42
Length in Leads:	Up to 65'
Weight/LF:	42 lb
Wall Thickness:	0.415"
Taper:	N/A
Cross Sectional Area:	12.4 in <sup>2</sup>
Ultimate Capacity	320 kips
Splice Description:	Full Penetration Butt Weld
Tip Treatment Description:	Cast Steel Point

# 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)	47,132 ft-lbs (63.63 kNm)
Setting 3	39,119 ft-lbs (52.81 kNm)
Setting 2	31,107 ft-lbs (41.99 kNm)
Minimum rated energy (Setting 1)	23,566 ft-lbs (31.81 kNm)
<i>(Variable throttle allows for infinite fuel settings)</i>	

Maximum obtainable stroke	150 in (381 cm)
Maximum obtainable energy	52,362 ft-lbs (71 kNm)
Speed (blows per minute)	34-52

### WEIGHTS (Approximate)

Ram	4,189 lbs (1900 kg)
Anvil	749 lbs (340 kg)
Anvil cross sectional area	124.42 in <sup>2</sup> (802.71 cm <sup>2</sup> )
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	0.13 gal/hr (.49 liters/hr)
Grease	8 to 10 pumps every 20 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	398 in <sup>2</sup> (2567.74 cm <sup>2</sup> )
Thickness	6 in (15.24 cm)

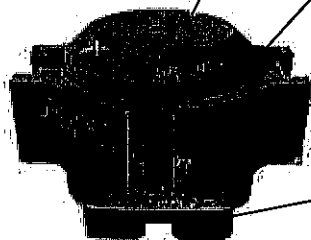
### STRIKER PLATE FOR DB 20

Weight	440 lbs (199 kg)
Diameter	17.75 in (45.08 cm)
Area	247 in <sup>2</sup> (1593.55 cm <sup>2</sup> )
Thickness	6 in (15.24 cm)

### CUSHION MATERIAL

Type	Monocast MC 904
Diameter-DB26	22.5 in (57.15 cm)
Diameter-DB20	17.75 in (45.08 cm)
Thickness	2 in (5.08 cm)
Elastic-modulus	285 ksi (1,965 mpa)
Coeff. of restitution	0.8

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)

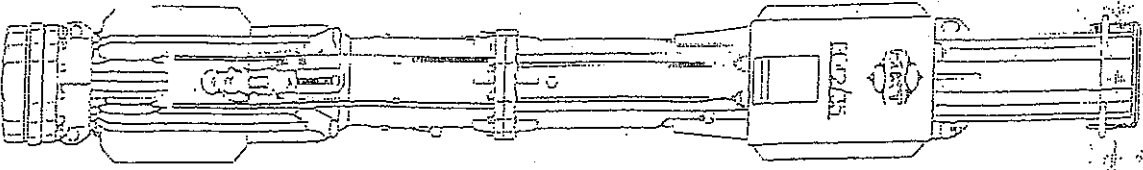
### MINIMUM BOX LEAD SIZE/OPERATING LENGTH

Minimum box leader size	8 in x 21 in (20.32 cm x 53.34 cm)
Operating length w/ base and insert	348 in (883.92 cm)



Corporate Offices  
7032 South 196th  
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(253) 872-8710 Fax

Visit our WEB site:  
[www.apevibro.com](http://www.apevibro.com)  
e-mail: [ape@apevibro.com](mailto:ape@apevibro.com)



INTRODUCING THE  
NEW

# DE-42/35

MAXIMUM DIESEL HAMMER FLEXIBILITY  
FITTING IN 8 X 20 LEADS WITH RAM  
WEIGHTS TO 4,200 LBS.

ONE HAMMER... MULTIPLE RAM SIZES...  
AND ENERGY RANGES. ANOTHER MKT  
FIRST PROVIDING THE CONTRACTOR  
WITH HAMMER SIZE FLEXIBILITY AND  
REDUCED EQUIPMENT INVESTMENT  
COSTS. MKT DIESEL HAMMERS CONTINUE  
TO OFFER FEATURES WHICH INSURE  
DEPENDABLE AND PRODUCTIVE  
OPERATION. USING EITHER STANDARD OR  
REMOTE FUEL DELIVERY SYSTEMS.

SPECIFICATIONS DE-42/35

RAM-PISTON WEIGHT (LBS.)	3,500	4,200
ENERGY RATING (FT. LBS.)	35,000	42,000
BEARING BASED ON ENGINEERING NEWS FORMULA (TONS)	350	230
MAXIMUM OBTAINABLE STROKE	16"	10'-6"
OVERALL LENGTH WITH DRIVE CAP	16'-7"	16'-7"
WEIGHT, HAMMER ONLY (LBS.)	8,600	9,300
WEIGHT, HAMMER AND UNIVERSAL DRIVE CAP (LBS.)	9,350	10,250

RAM-PISTON WEIGHTS ARE EQUAL TO RAM WEIGHT X 10. RAM STROKE, ACTUAL STROKES DELIVERED ARE A FUNCTION OF THE OVERALL JOB CONDITIONS. BEARING RATINGS ARE BASED UPON ENGINEERING NEWS FORMULA PILE SET EQUATION 8.1.1. HOLLOW.

## PRODUCT LIST

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| SINGLE ACTING DIESEL PILE HAMMERS | DOUBLE ACTING DIESEL PILE HAMMERS |
| AIR PILE HAMMERS                  | DRIVE CAPS AND ACCESSORIES        |
| VIBRATORY PILE DRIVERS/TRACTORS   | HYDRAULIC POWER UNITS             |
| VIBRATORY HAMMER ACCESSORIES      | HYDRAULIC AUGER SYSTEMS           |
| PILE DRIVING LEAD SYSTEMS         | BOTTOM BRACES                     |
| CUSTOM ENGINEERED PRODUCTS        | LEAD ACCESSORIES                  |

# APE D19-42 VARIABLE CAPACITY

H.B. FLEMING  
Enter Project Title Here

05-Oct-2017  
GRLWEAP (TM) Version 2005

Ultimate Capacity kips	Maximum Compression Stress ksi	Maximum Tension Stress ksi	Blow Count blows/in	Stroke ft	Energy kips-ft
260.0	38.58	1.08	2.9	8.59	23.25
280.0	39.73	1.18	3.3	8.80	23.67
300.0	40.74	1.18	3.8	9.02	24.11
310.0	41.18	1.17	4.0	9.11	24.36
→ 320.0	41.59	1.14	4.4	9.20	24.53
330.0	41.95	1.09	4.7	9.29	24.71
340.0	42.27	1.05	5.1	9.37	24.88
360.0	42.86	0.95	6.0	9.54	25.26
380.0	43.19	0.83	7.3	9.66	25.44
400.0	43.54	0.71	8.8	9.79	25.73



# APE D19-42 VARIABLE CAPACITY

05-Oct-2017  
GRLWEAP (TM) Version 2005

H.B. FLEMING  
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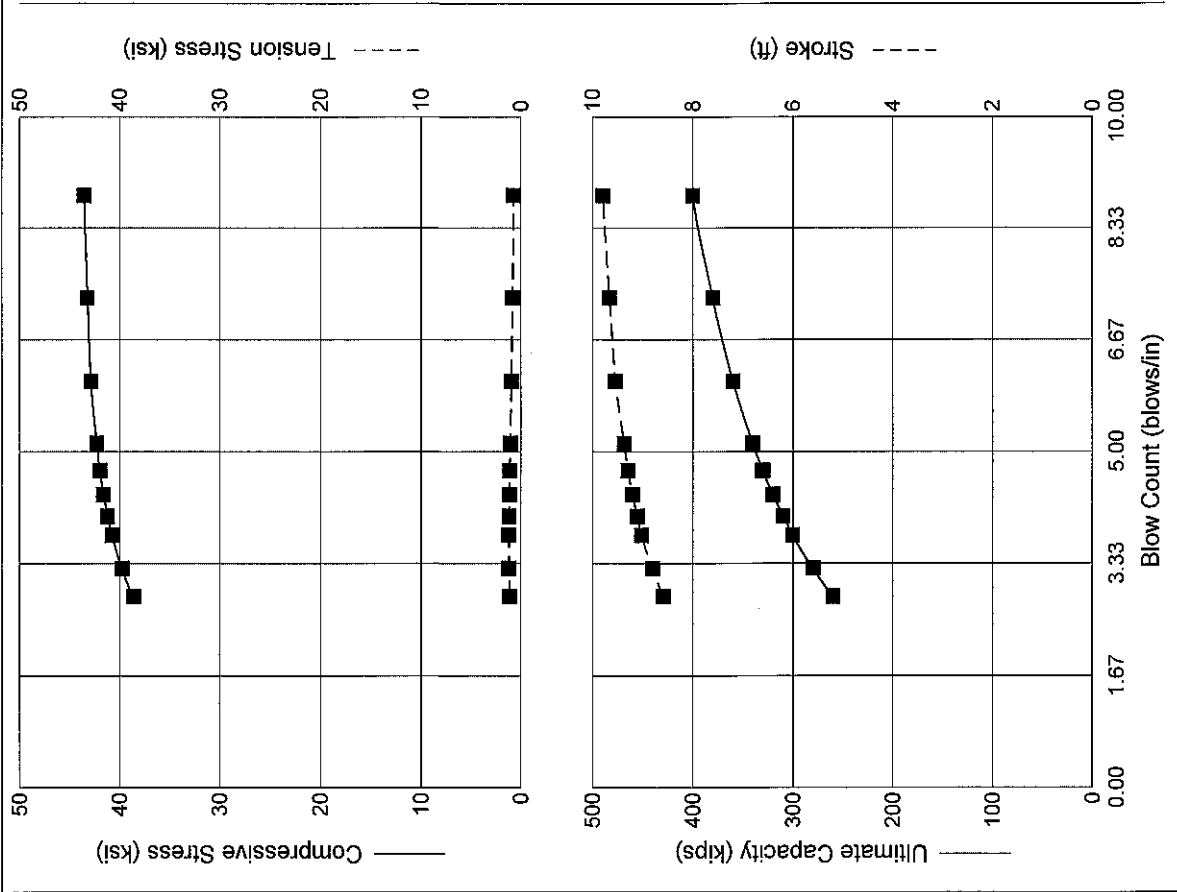
APE D 19-42

Efficiency	0.800
Helmet	1.20 kips
Hammer Cushion	40399 kips/in
Skin Quake	0.100 in
Toe Quake	0.040 in
Skin Damping	0.148 sec/ft
Toe Damping	0.150 sec/ft
Pile Length	60.00 ft
Pile Penetration	60.00 ft
Pile Top Area	12.40 in <sup>2</sup>

Skin Friction Distribution

Pile Model

Res. Shaft = 25 %  
(Proportional)



MKTDE42 VARIABLE CAPACITY

H.B. FLEMING  
Enter Project Title Here

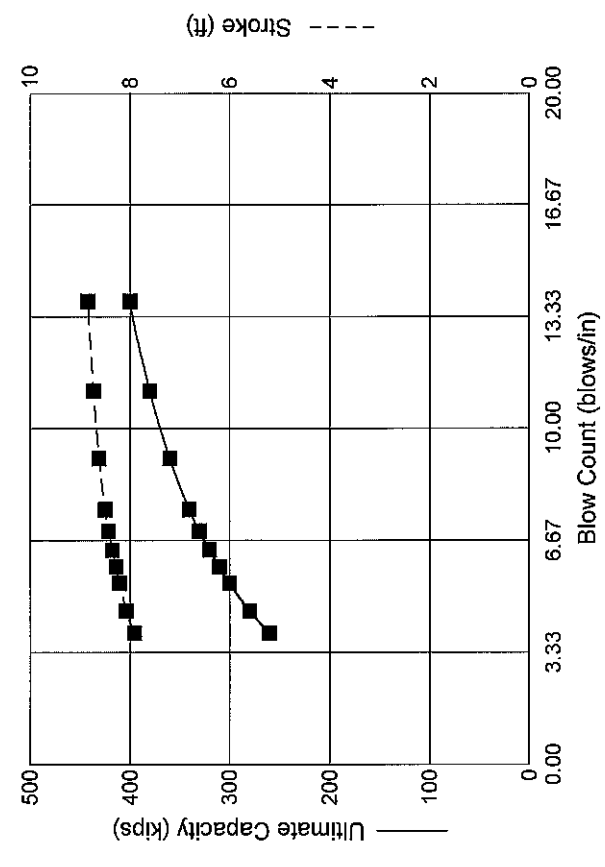
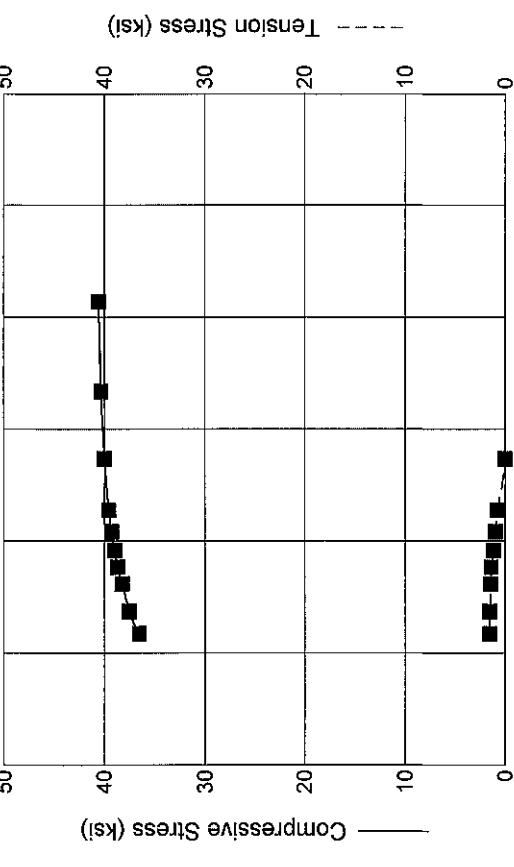
05-Oct-2017  
GRLWEAP (TM) Version 2005

Ultimate Capacity kips	Maximum Compression Stress ksi	Maximum Tension Stress ksi	Blow Count blows/in	Stroke ft	Energy kips-ft
260.0	36.52	1.56	3.9	7.91	18.96
280.0	37.49	1.54	4.6	8.07	19.34
300.0	38.22	1.44	5.4	8.21	19.62
310.0	38.63	1.40	5.9	8.28	19.76
→ <u>320.0</u>	<u>38.95</u>	1.16	<u>6.4</u>	8.35	19.97
330.0	39.24	0.98	7.0	8.43	20.13
340.0	39.54	0.76	7.6	8.50	20.27
360.0	39.95	0.03	9.1	8.62	20.54
380.0	40.33	0.00	11.1	8.73	20.78
400.0	40.55	0.00	13.8	8.84	21.00

# MKT DE42 VARIABLE CAPACITY

05-Oct-2017  
GRLWEAP (TM) Version 2005

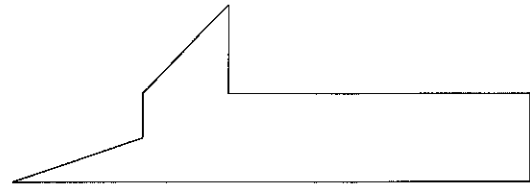
H.B. FLEMING  
Enter Project Title Here



MKT DE 42/35

- Efficiency 0.800
- Helmet 1.20 kips
- Hammer Cushion 40399 kips/in
- Skin Quake 0.100 in
- Toe Quake 0.040 in
- Skin Damping 0.148 sec/ft
- Toe Damping 0.150 sec/ft
- Pile Length 60.00 ft
- Pile Penetration 60.00 ft
- Pile Top Area 12.40 in<sup>2</sup>

Skin Friction Distribution



Pile Model



Res. Shaft = 25 %  
(Proportional)

# APE 019 CONSTANT CAPACITY

H.B. FLEMING  
Enter Project Title Here

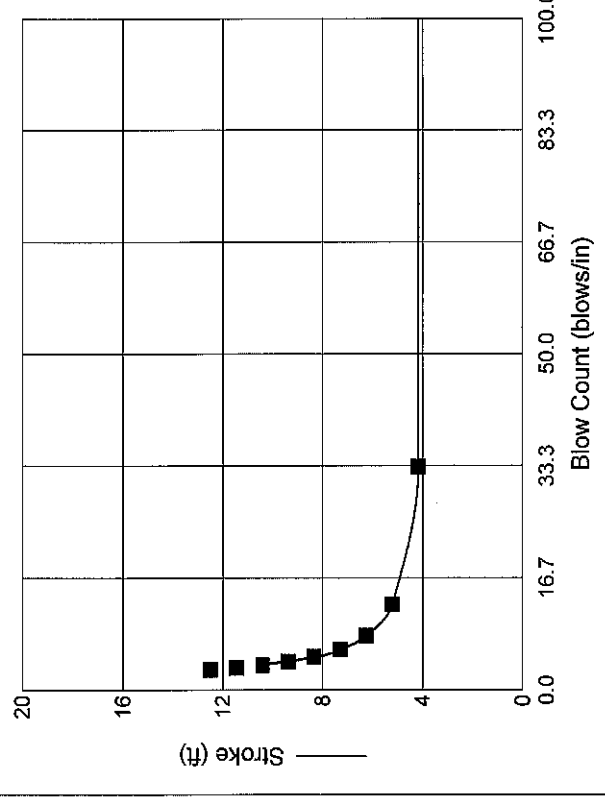
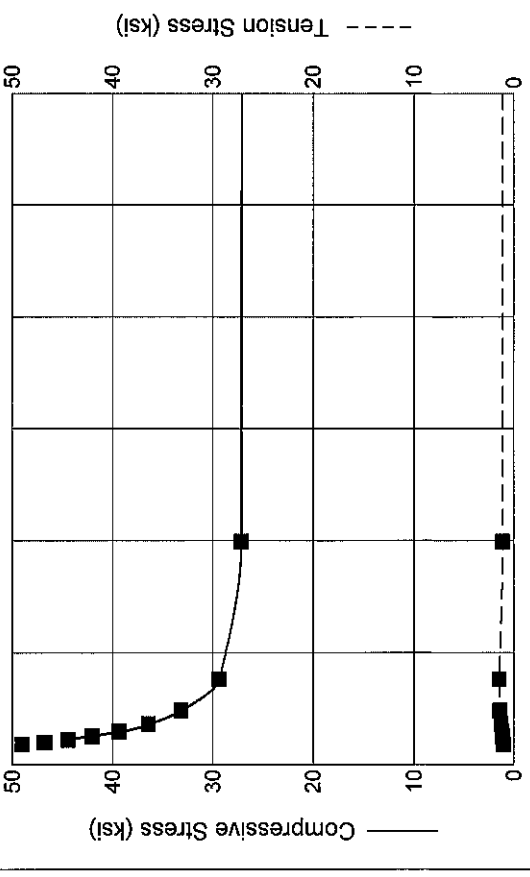
05-Oct-2017  
GRLWEAP (TM) Version 2005

Ultimate Capacity kips	Maximum Compression Stress ksi	Maximum Tension Stress ksi	Blow Count blows/in	Stroke ft	Energy kips-ft
320.0	23.38	1.21	9999.0	3.12	7.58
320.0	27.14	1.12	33.2	4.17	10.73
320.0	29.35	1.44	12.8	5.21	13.72
320.0	33.16	1.40	8.1	6.25	16.63
320.0	36.41	1.28	6.1	7.29	19.47
320.0	39.35	1.17	5.0	8.33	22.26
320.0	42.02	1.13	4.3	9.38	24.98
320.0	44.45	1.10	3.8	10.42	27.68
320.0	46.81	1.07	3.4	11.46	30.40
320.0	49.00	1.03	3.1	12.50	32.98

# APE D19 CONSTANT CAPACITY

05-Oct-2017  
GRLWEAP (TM) Version 2005

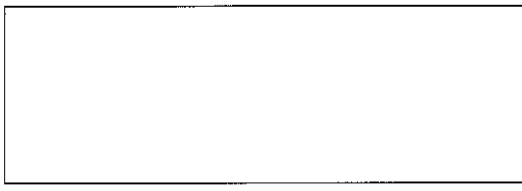
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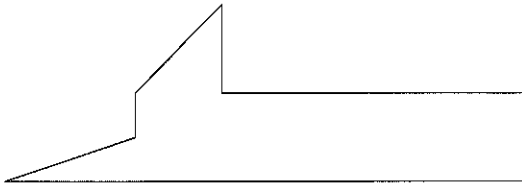
APE D 19-42

Capacity	320.0 kips
Efficiency	0.800
Helmet	1.20 kips
Hammer Cushion	40399 kips/in
Skin Quake	0.100 in
Toe Quake	0.040 in
Skin Damping	0.148 sec/ft
Toe Damping	0.150 sec/ft
Pile Length	60.00 ft
Pile Penetration	60.00 ft
Pile Top Area	12.40 in <sup>2</sup>

Pile Model



Skin Friction Distribution



Res. Shaft = 25 %  
(Proportional)

MKT DE42 CONSTANT CAPACITY

H.B. FLEMING  
Enter Project Title Here

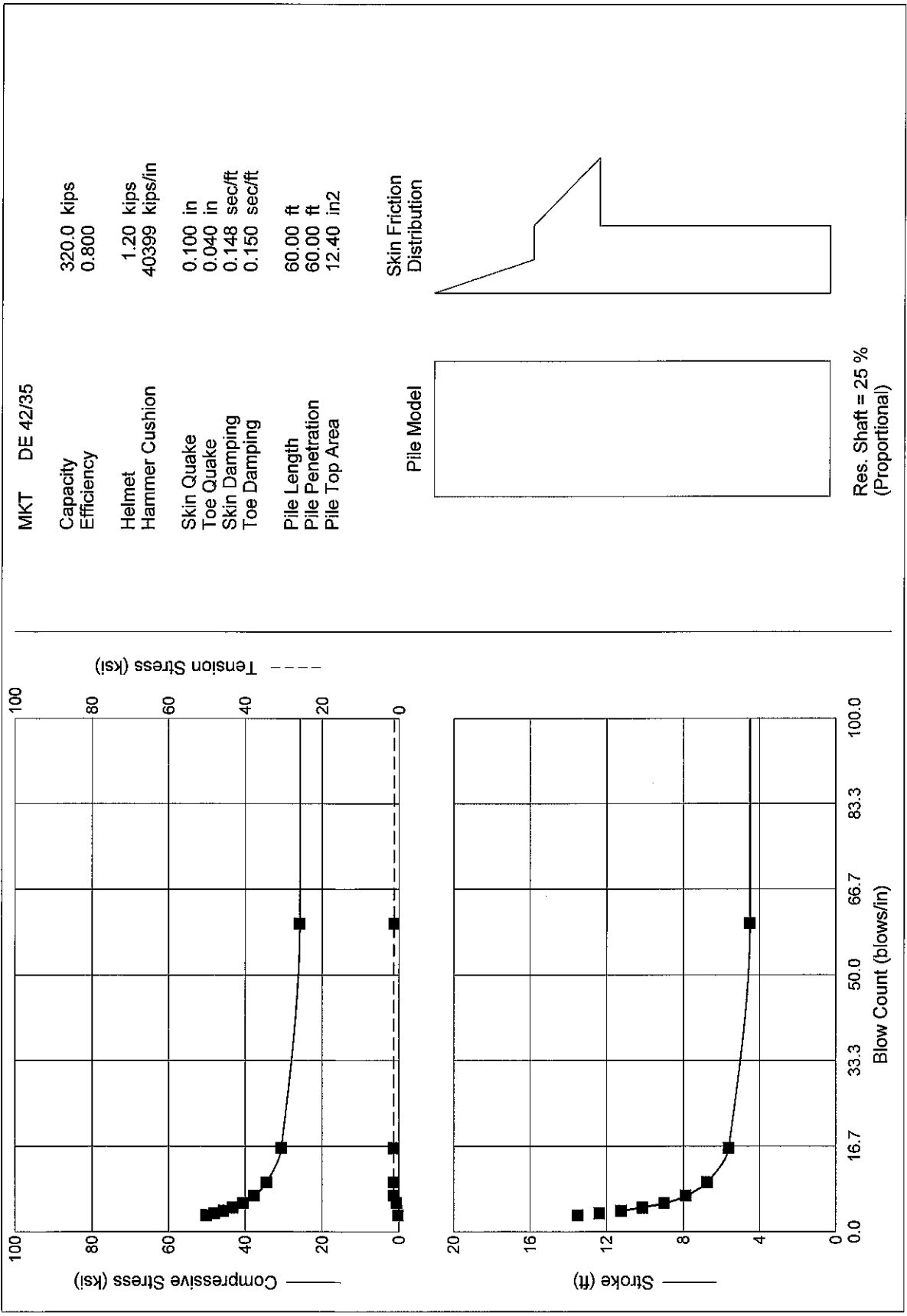
05-Oct-2017  
GRLWEAP (TM) Version 2005

Ultimate Capacity kips	Maximum Compression Stress ksi	Maximum Tension Stress ksi	Blow Count blows/in	Stroke ft	Energy kips-ft
320.0	21.96	1.04	9999.0	3.38	6.20
320.0	25.86	1.31	60.0	4.50	9.46
320.0	30.62	1.40	16.4	5.62	12.61
320.0	34.42	1.39	9.7	6.75	15.72
320.0	37.67	1.36	7.1	7.88	18.69
320.0	40.56	0.65	5.6	9.00	21.68
320.0	43.26	0.00	4.7	10.12	24.57
320.0	45.66	0.00	4.1	11.25	27.43
320.0	48.02	0.00	3.7	12.38	30.24
320.0	50.21	0.26	3.2	13.50	32.95

# MKT DE42 CONSTANT CAPACITY

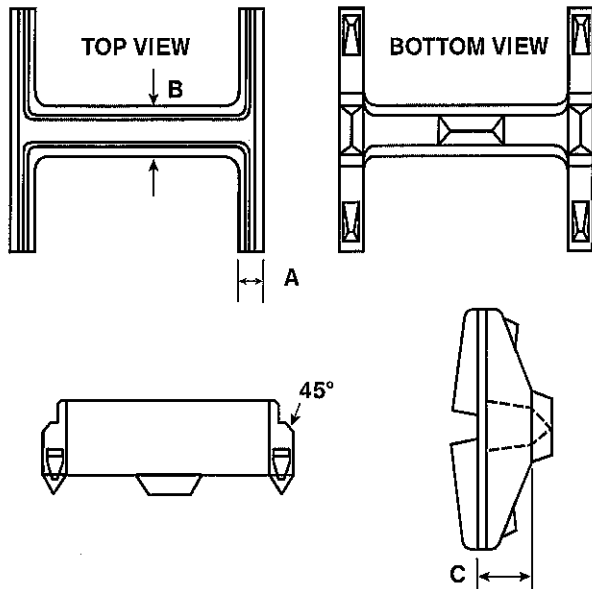
05-Oct-2017  
GRLWEAP (TM) Version 2005

H.B. FLEMING  
Enter Project Title Here



# HARD-BITE™ – HP-77600-B

## Dimensions



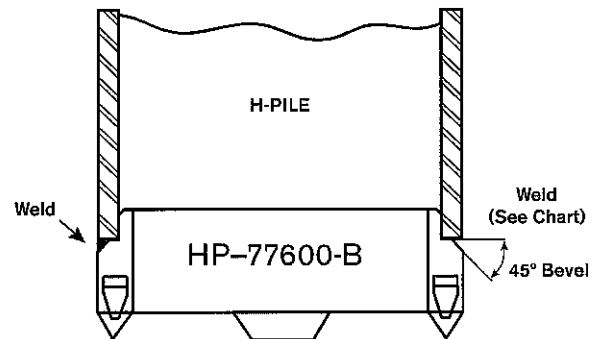
**MATERIAL: CAST STEEL**

ASTM A148 90/60

	8"	10"	14"
A	1-1/16"	1"	1"
B	1"	1"	1-1/4"
C	1-7/8"	2-1/16"	2-3/4"
Wt.	12#	23#	31#

## Installation Instructions

1. Fit point onto the end of the square cut pile end.
2. Weld point to the pile in either flat or vertical position using E7018 electrodes.
3. Weld across full width of flange following chart below for minimum size weld.



Pile Size	Flange Thickness	Groove Weld
HP 14 x 117	.805	7/16
x 102	.705	3/8
x 89	.615	3/8
x 73	.505	5/16
HP 10 x 57	.565	5/16
x 42	.420	5/16
HP 8 x 36	.445	5/16



**ASSOCIATED PILE  
& FITTING**

PO Box 5933 Parsippany, NJ 07054-5933

Tel: 973-773-8400

Fax: 973-428-5146

email: apf@associatedpile.com

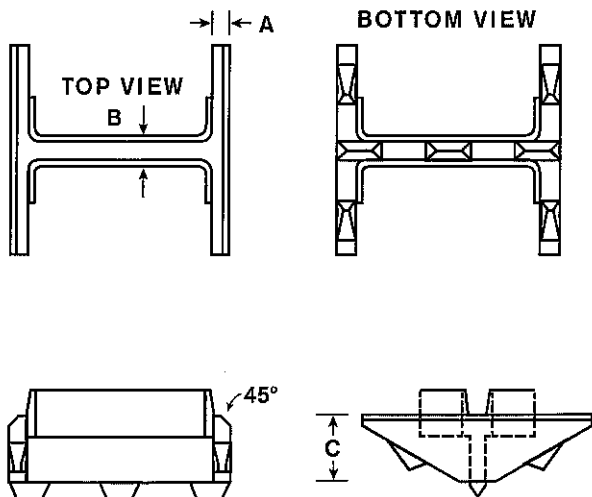
www.associatedpile.com

Call Toll Free: 800-526-9047



# HARD-BITE™ – HP-77750-B

## Dimensions



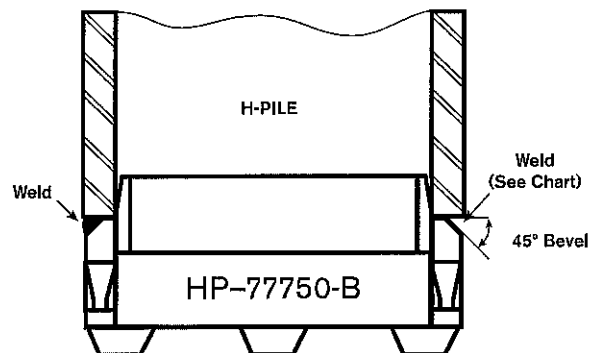
**MATERIAL: CAST STEEL**

ASTM A148 90/60

	10"	12"	14"
A	3/4"	3/4"	1"
B	1-3/8"	1-1/2"	1-5/8"
C	3"	3-1/2"	4"
Wt.	19#	25#	42#

## Installation Instructions

1. Fit point onto the end of the square cut pile end.
2. Weld point to the pile in either flat or vertical position using E7018 electrodes.
3. Weld across full width of flange following chart below for minimum size weld.



Pile Size	Flange Thickness	Groove Weld
HP 14 x 117	.805	7/16
x 102	.705	3/8
x 89	.615	3/8
x 73	.505	5/16
HP 12 x 84	.685	3/8
x 74	.610	3/8
x 63	.515	5/16
x 53	.435	5/16
HP 10 x 57	.565	5/16
x 42	.420	5/16

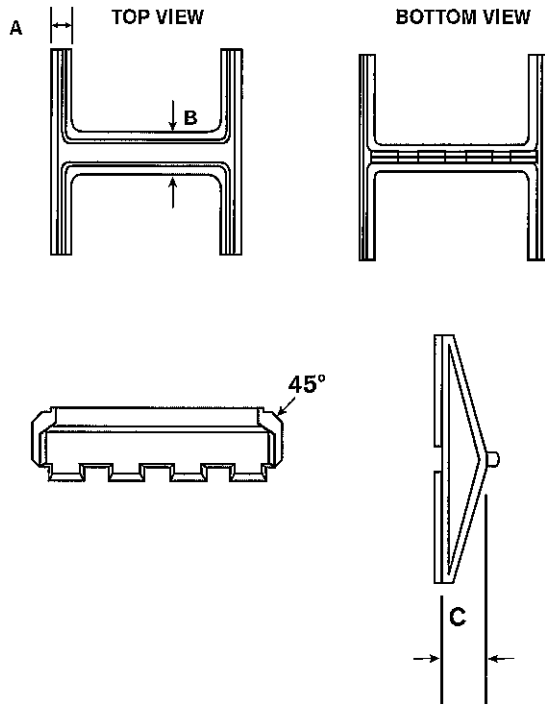


**ASSOCIATED PILE  
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 www.associatedpile.com  
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# SUPER BITE POINT – Series PAR-T

## Dimensions



ASTM A148 90/60 - Heat Treated

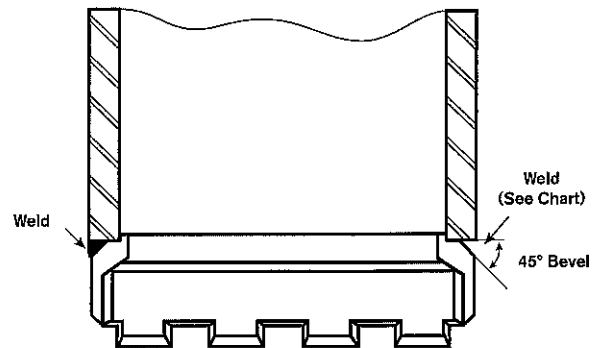
	10"	12"	14"
A	1"	1-1/4"	1-1/4"
B	1-1/4"	1-7/16"	1-3/4"
C	2-9/16"	2-5/8"	2-15/16"
WT	14	23	30

NORMAL FOUNDRY TOLERANCES APPLY

## Installation Instructions

Super Bite Point Series PAR-T

1. Fit point onto the end of the square cut pile end.
2. Weld point to the pile in either flat or vertical position using E7018 electrodes.
3. Weld across full width of flange following chart below for minimum size weld.



Pile Size	Flange Thickness	Min. Size Groove Weld
HP 14 x 117	.805	7/16
x 102	.705	3/8
x 89	.615	3/8
x 73	.505	5/16
HP 12 x 84	.685	3/8
x 74	.610	3/8
x 63	.515	5/16
x 53	.435	5/16
HP 10 x 57	.565	5/16
x 42	.420	5/16



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[www.associatedpile.com](http://www.associatedpile.com)  
 Call Toll Free: 800-526-9047

**JOINT WELDING  
PROCEDURE SPECIFICATION**

Material specification ASME A572 Gr 50  
 Welding process SAW  
 Manual or machine MANUAL  
 Position of welding HORIZONTAL  
 Filler metal specification AWS A5.1  
 Filler metal classification E7018  
 Flux N/A  
 Shielding gas N/A Flow rate N/A  
 Single or multiple pass MULTIPLE  
 Single or multiple arc SINGLE  
 Welding current DC  
 Polarity REVERSE  
 Welding progression N/A  
 Root treatment GRIND & BURN TO REMOVE ANY GRIND ANCHOR HOLES FOR WELD ANCHORS; PACKING/GRIND AS REQ'D.  
 Preheat and interpass temperature PER AWS D1.1  
 Postheat treatment NONE

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Amperes	Volts		
1N	1/8"	120-150	12-24	1 1/4 in/min	
2+	1/8"	120-150	12-24	1 1/4 in/min	
	5/32"	140-180	12-24	1 1/4 in/min	

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure no. PLG - Full Penetration Butt Weld - SAW Contractor H.B. Frank  
 Revision no. \_\_\_\_\_ Authorized by \_\_\_\_\_  
 Form E-2 Date 5/13/16

**JOINT WELDING  
PROCEDURE SPECIFICATION**

Material specification ASTM A572 Gr 50  
 Welding process EPAW  
 Manual or machine MANUAL  
 Position of welding HORIZONTAL  
 Filler metal specification 6010  
 Filler metal classification E71T-8  
 Flux N/A  
 Shielding gas M/A Flow rate N/A  
 Single or multiple pass MULTIPLE  
 Single or multiple arc SINGLE  
 Welding current DC  
 Polarity REVERSE  
 Welding progression N/A  
 Root treatment GRIND & BEVEL & DRAG  
 Preheat and interpass temperature PER AWS D.1.1  
 Postheat treatment NONE

**WELDING PROCEDURE**

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Amperes	Volts		
1	1/16"	220	17-19	10 in/min	
2*	1/16"	220	17-19	10 in/min	

This procedure may vary due to fabrication sequence, fill-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure no. FLAW-H-PUS Contractor H.B. FLEMING, INC.  
 Revision no. 0 Authorized by [Signature]  
 Form E-2 Date 11/19/15