

Our File: 2231-27311-01

# **TECHNICAL MEMO**

<b>To</b> Ms. Leslie Carter, Administrator Deep Bay Improvement District	<b>From</b> Chris Pogson, P.Eng., Project Manager
Re	Date
4891 Thompson Clark West	July 28, 2021
Future Right-of-Way Review	

As per our conversation dated July 28, 2021, McElhanney Ltd. (McE) has undertaken a review of the potential future Right-of-Way (ROW) width required for maintenance and future replacement of the existing 200mm asbestos cement watermain located on 4891 Thompson Clark West.

This memorandum summarizes the results of our assessment and provides comments and recommendations for consideration.

## 1. Background

The District is currently in negotiations with the landowner of 4891 Thompson Clark West, to secure rights on an unsecured portion of watermain. In addition, the District would like to expand an existing right-of-way to facilitate maintenance activates on the existing watermain and ultimately future replacement.

A site reconnaissance was carried out by Chris Pogson, P.Eng. of McE with permission of the homeowner, on October 1, 2020. Representatives from the client, Regional District of Nanaimo (RDN) and the property owners George & Joanne Cousineau were in attendance.

The purpose of the site reconnaissance was to meet the homeowner and review concerns of an adjacent slope and drainage issues. In addition, existing and future watermain alignments, construction constraints, and general site topography were discussed.

## 2. GENERAL COMMENTS

Utility ROW widths vary depending on a wide variety of factors. For single utilities, ROW's are generally defined at the time construction and based on the governing jurisdictions standards (i.e. provincial or local government requirements). Standards tend to typically vary between 3.0m to 6.0m in width, centered over the utility.

However, in all cases ROW widths should be sufficient to permit open excavation with side slopes and access for construction equipment's in accordance with WorkSafeBC regulations, without impacting adjacent structures.

In some cases, temporary ROW's and easements are utilized in conjunction with permanent ones during construction.

## **3. ESTIMATED ROW WIDTH**

We have estimated the proposed ROW width based on the following considerations:

- Conventual cut and cover construction;
- Standard excavating equipment (EX120 class excavator);
- Existing site topography (including creek crossing); and,
- Existing and future watermain horizontal alignment and depth below ground.

Without the use of temporary working ROW's or Easements, the width of ROW will be governed by the construction and service equipment requirements. As such, below are the minimum requirements for an industry standard excavator:

- 1) Hitachi Super EX120-V Class, undercarriage width = 2.59m (using 600mm track gauge)
- 2) Hitachi Super EX120-V Class, with standard boom. Load radius = 4.0m
- 3) Hitachi Super EX120-V Class, Rear Swing Radius = 2.13m.

Based on the above the minimum ROW width should be: 4.0m + 2.13m = 6.13m.

## 4. DISCUSSION

The following comments are provided for consideration:

- 1) The minimum ROW width should be in the order of 6.13m in width.
- 2) The ROW should be centered over the existing utility, for ease of maintenance.
- 3) Temporary Working ROW's or Easements should be considered to minimize permanent ROW widths and property encumbrance.



## 5. Limitations

McElhanney Ltd. (McE) has prepared this document in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this document. No warranty, express or implied, is made.

The factual data, interpretations, suggestions, recommendations and opinions expressed in this document pertain to the specific project, site conditions, design objective, development and purpose described to McE by the Client and/or their design consultants, and are not applicable to any other project or site location. In order to properly understand the factual data, interpretations, suggestions, recommendations and opinions expressed in this document, reference must be made to the entire document.

## 6. Closure

We trust this meets the District needs, however please do not hesitate to contact me directly should you have any further questions or concerns.

Regards, McElhanney Ltd.

Chris Pogson, P.Eng. Project Manager <u>cpogson@mcelhanney.com</u> 778-792-0667



# **Specifications: EX120**

## Service Refill Capacities

	US gal	Liters	Imp gal
Fuel tank	66.1	250.0	55.0
Engine coolant	4.9	18.4	4.0
Engine oil	4.3	16.2	3.6
Swing mechanism	0.8	3.2	0.7
Travel final drive device (each side)	0.9	3.5	0.8
Hydraulic system	35.4	134.0	29.5
Hydraulic tank	18.2	69.0	15.2

### Bucket Selection Chart Bucket capacity indicated is SAE heaped.

Material (loose weight)	General-Purpose Bucket* Heavy-Duty Buck					
3,400 - 3,100 lb/yd <sup>3</sup> (2 020 - 1 840 kg/m <sup>3</sup> ) Sand and gravel, wet Sand, wet	0.63 yd³ 0.63 yd³	0.5 m³ 0.5 m³	0.50 yd³ 0.50 yd³	0.4 m³ 0.4 m³		
2,900 - 2,550 lb/yd <sup>3</sup> (1 720 - 1 510 kg/m <sup>3</sup> ) Sand and gravel, dry Sand, moist Rock, granite, blasted and broken Clay, wet Earth, wet Limestone, broken or crushed Earth, dry	0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.63-0.88 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.50-0.75 yd <sup>3</sup> 0.63-0.75 yd <sup>3</sup>	0.6 m <sup>3</sup> 0.6 m <sup>3</sup> 0.5-0.7 m <sup>3</sup> 0.6 m <sup>3</sup> 0.6 m <sup>3</sup> 0.4-0.6 m <sup>3</sup> 0.5-0.6 m <sup>3</sup>	$\begin{array}{c} 0.63 \ \text{yd}^3 \\ 0.63 \ \text{yd}^3 \\ 0.50\text{-}0.75 \ \text{yd}^3 \\ 0.63 \ \text{yd}^3 \\ 0.63 \ \text{yd}^3 \\ 0.50\text{-}0.63 \ \text{yd}^3 \\ 0.50\text{-}0.63 \ \text{yd}^3 \end{array}$	0.5 m <sup>3</sup> 0.5 m <sup>3</sup> 0.4-0.6 m <sup>3</sup> 0.5 m <sup>3</sup> 0.5 m <sup>3</sup> 0.4-0.5 m <sup>3</sup>		
2,500 - 2,100 lb/yd <sup>3</sup> (1 480 - 1 250 kg/m <sup>3</sup> ) Clay, dry Sand, dry Shale Earth, Ioam Caliche	0.63-0.88 yd <sup>3</sup> 0.88 yd <sup>3</sup> 0.88 yd <sup>3</sup> 0.88 yd <sup>3</sup> 0.63-0.88 yd <sup>3</sup>	0.5-0.7 m <sup>3</sup> 0.7 m <sup>3</sup> 0.7 m <sup>3</sup> 0.7 m <sup>3</sup> 0.5-0.7 m <sup>3</sup>	0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.75 yd <sup>3</sup> 0.50-0.75 yd <sup>3</sup>	0.6 m <sup>3</sup> 0.6 m <sup>3</sup> 0.6 m <sup>3</sup> 0.6 m <sup>3</sup> 0.4-0.6 m <sup>3</sup>		
<b>1,780 - 1,170 lb/yd<sup>3</sup> (1 050 - 690 kg/m<sup>3</sup>)</b> Coal Topsoil Peat, wet	1.25 yd <sup>3</sup> 1.38 yd <sup>3</sup> 1.75 yd <sup>3</sup>	1.0 m <sup>3</sup> 1.1 m <sup>3</sup> 1.3 m <sup>3</sup>	-	- - -		
950 - 700 lb/yd³ (560 - 420 kg/m³) Cinders Peat, dry Wood chips	2.00 yd³ 2.75 yd³ 3.25 yd³	1.5 m <sup>3</sup> 2.1 m <sup>3</sup> 2.5 m <sup>3</sup>	- - -	- -		

\* Contact your Hitachi dealer for optimum, bucket and attachment selections. These recommendations are for general conditions and average use. Larger buckets may be possible for flat and level operations, less compacted materials, and volume loading applications such as mass excavation applications in ideal conditions. Smaller buckets are recommended for adverse conditions such as off-level applications and uneven surfaces.

### **Buckets**

Capacity		Width				Red	commendat EX120	tion
PCSA heaped	CECE heaped	Without side cutters	With side cutters	No. of teeth	Weight	6' 11" (2.10 m) arm	8' 3" (2.52 m) arm	9' 11" (3.01 m) arm
0.25 yd <sup>3</sup> (0.19 m <sup>3</sup> )	0.17 m <sup>3</sup>	18" (450 mm)	22" (550 mm)	3	530 lb (240 kg)	•	•	•
0.39 yd <sup>3</sup> (0.30 m <sup>3</sup> )	0.25 m <sup>3</sup>	23" (580 mm)	28" (700 mm)	3	620 lb (280 kg)	•	•	
0.52 yd <sup>3</sup> (0.40 m <sup>3</sup> )	0.33 m <sup>3</sup>	27" (680 mm)	31" (800 mm)	4	730 lb (330 kg)		•	
0.60 yd <sup>3</sup> (0.46 m <sup>3</sup> )	0.40 m <sup>3</sup>	33" (850 mm)	38" (970 mm)	5	840 lb (380 kg)		•	+
0.72 yd <sup>3</sup> (0.55 m <sup>3</sup> )	0.45 m <sup>3</sup>	35" (890 mm)	40" (1 010 mm)	5	880 lb (400 kg)			<b>*</b>
0.77 yd <sup>3</sup> (0.59 m <sup>3</sup> )	0.50 m <sup>3</sup>	37" (950 mm)	42" (1 070 mm)	5	900 lb (410 kg)		+	-
0.86 yd <sup>3</sup> (0.66 m <sup>3</sup> )	0.55 m <sup>3</sup>	41" (1 030 mm)	-	5	900 lb (410 kg)		-	-
*1 0.72 yd <sup>3</sup> (0.55 m <sup>3</sup> )	0.45 m <sup>3</sup>	35" (890 mm)	40" (1 010 mm)	5	1,010 lb (460 kg)			<b>*</b> *
*2 0.72 yd <sup>3</sup> (0.55 m <sup>3</sup> )	0.45 m <sup>3</sup>	35" (890 mm)	40" (1 010 mm)	5	1,080 lb (490 kg)			<b>*</b> *
*3 0.72 yd <sup>3</sup> (0.55 m <sup>3</sup> )	0.45 m <sup>3</sup>	35" (890 mm)	40" (1 010 mm)	5	1,040 lb (470 kg)	•	•	<b>*</b> *
*1 0.77 yd <sup>3</sup> (0.59 m <sup>3</sup> )	0.50 m <sup>3</sup>	37" (950 mm)	42" (1 070 mm)	5	1,060 lb (480 kg)		•	-
V-Type bucket: 0.46 yd <sup>3</sup> (0.35 m <sup>3</sup> : CECE heaped)					820 lb (370 kg)	+	+	+
One point ripper					710 lb (320 kg)	*	×	-
Clamshell bucket: 0.39 yd <sup>3</sup> (0.30 m <sup>3</sup> : CECE heaped), Width 22" (560 mm)					1,520 lb (690 kg)			-
Slope-finishing blade: W	idth-39" (1 00	0 mm), Length-63"	(1 600 mm)		950 lb (430 kg)	\$	\$	\$

\* With 28" (700 mm) shoes only

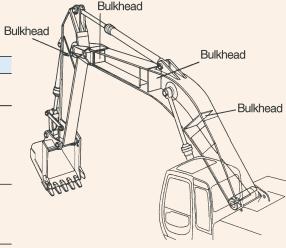
\*1 Reinforced bucket

\*2 Level-pin-reinforced bucket

\*3 H-bucket

### 1220 **Backhoe Attachments**

Boom and arms are of wel	ded, box-	section design.	
Boom length:	15′1″	(4.60 m)	
Arms available in lengths:	6′11″	(2.10 m)	
-		(2.52 m)	
	9′11″	(3.01 m)	
Bucket is of welded steel st	tructure. S	Side clearance a	adjustment
mechanism provided on th	e bucket	joint bracket.	



### **Reinforced Front Attachment**

• Suitable for materials with density

Suitable for materials with density of 2,700 lb/yd<sup>3</sup> (1 600 kg/m<sup>3</sup>) or less

Suitable for materials with density of 1,850 lb/yd<sup>3</sup> (1 100 kg/m<sup>3</sup>) or less

Heavy-duty service

Not recommended

Slope finishing service

of 3,370 lb/yd3 (2 000 kg/m3) or less

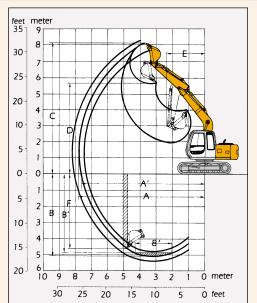
Bulkheads are provided inside the front attachment to resist torsion and thickened plates are used in areas subject to stress concentration for added durability in tough operations.

## **BACKHOE** EX120 **Dimensions** Κ Е N н -

				EX120	
Α	Distance between tumblers		9'5"	(2 880 mm)	
В	Undercarriage length		11'9"	(3 580 mm)	
*C	Counterweight clearance		2'11"	(890 mm)	
D	Rear-end swing radius		7'0"	(2 130 mm)	
D'	Rear-end length		6'11"	(2 100 mm)	
E	Overall width of upperstructure		8'1"	(2 460 mm)	
F	Overall height of cab		8'11"	(2 720 mm)	
*G	Min. ground clearance		1′5″	(440 mm)	
Н	Track gauge		6'6"	(1 990 mm)	
I	Track shoe width	G 20" (500 mm)	G 24" (600 mm)	G 28" (700 mm)	F 20" (510 mm)
J	Undercarriage width	8'2" (2 490 mm)	8′6″ (2 590 mm)	8'10" (2 690 mm)	8′2″ (2 500 mm)
K	Overall width	8'2" (2 500 mm)	8′6″ (2 590 mm)	8′10″ (2 690 mm)	8′2″ (2 500 mm)
L	Overall length With 6'11" (2.10 m) arm With 8'3" (2.52 m) arm With 9'11" (3.01 m) arm		24'10"	(7 570 mm) (7 580 mm) (7 590 mm)	
Μ	Overall height of boom With 6'11" (2.10 m) arm With 8'3" (2.52 m) arm With 9'11" (3.01 m) arm		8'10"	(2 570 mm) (2 680 mm) (2 670 mm)	
N	Track height With triple grouser shoes		2'7"	(790 mm)	
	uding track shoe lug	nole position of the arm		G: Triple gro	

\* This dimension is shown in the transportation hole position of the arm

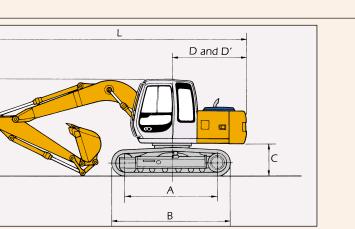
## Working Ranges



Arm ler

A Max

A' Ma



F: Flat sho	e
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			EX120				
ength		6'11" (2.10 m)	8'3" (2.52 m)	9′11″ (3.01 m)			
ax. diggin	g reach	25'11" (7 900 mm)	27'2" (8 270 mm)	28'8" (8 740 mm)			
ax. diggin 1 ground)	ig reach	25′6″ (7 770 mm)	26'8" (8 140 mm)	28'3" (8 620 mm)			
ıx. diggin	g depth	16'11" (5 160 mm)	18'3" (5 570 mm)	19'11" (6 060 mm)			
ix. digging depth level)		16'2" (4 920 mm)	17′7″ (5 360 mm)	19'3" (5 880 mm)			
ax. cutting height		27′5″ (8 350 mm)	28'1" (8 550 mm)	29'2" (8 880 mm)			
ax. dumping height		19′6″ (5 940 mm)	20'2" (6 140 mm)	21'3" (6 470 mm)			
n. swing radius		7′7″ (2 310 mm)	7′8″ (2 330 mm)	8′6″ (2 590 mm)			
x. vertica	l wall	15'3" (4 640 mm)	16′5″ (5 010 mm)	18'0" (5 480 mm)			
diaging	ISO		20,100 lbf (9 100 kgf)				
digging SAE: PCSA		17,600 lbf (8 000 kgf)					
and force	ISO	15,000 lbf (6 800 kgf)	13,400 lbf (6 100 kgf)	11,900 lbf (5 400 kgf)			
owd force	SAE: PCSA	14,600 lbf (6 600 kgf)	13,000 lbf (5 900 kgf)	11,700 lbf (5 300 kgf)			

Excluding track shoe lug

## **Lifting Capacities: EX120**

EX120						o ™o La F	Rating ov or 360 deg Rating over front	grees	Un Meas 1,000 (1 000	ure: ) Ib			5 b:	Load r Load I Lifting	ooint	height	
	Load	6.56 ft	(2.0 m)	9.84 ft	(3.0 m)	Load ra	adius t (4.0 m)	16.40 ft	(5.0 m)	19.69 f	ft (6.0 m)	22.97 ft	t (7.0 m)	At ma	At max. reach		
Conditions	point height		<b>P</b>		h		<b>H</b>		<u> </u>		<b>Ľ</b>		<u> </u>		ĥ	ft (m)	
	19.69 ft (6 m)		0					*4.17	*4.17					*3.06	*3.06	20.05'	
	16.40 ft (5 m)							(1.89) 5.75 (2.61)	(1.89) *6.46 (2.93)					(1.39)	(1.39) *2.91 (1.32)	(6.11) 22.28' (6.79)	
300m: 15.09' (4.60 m)	13.12 ft (4 m)					*7.14	*7.14	5.67	*6.94	4.08	*5.97			(1.32)	*2.87	23.75' (7.24)	
Arm: 6.89'	9.84 ft (3 m)			*11.71 (5.31)	*11.71 (5.31)	(3.24) 7.89 (3.58)	(3.24) *9.06 (4.11)	(2.57) 5.47 (2.48)	(3.15) *7.80 (3.54)	(1.85) 3.99 (1.81)	(2.71) 5.97 (2.71)			(1.30) 2.65 (1.20)	(1.30) *2.89 (1.31)	(7.24) 24.61' (7.50)	
(2.10 m)	6.56 ft (2 m)			(5.31)	(5.31)	(3.58) 7.41 (3.36)	(4.11) *11.20 (5.08)	(2.48) 5.22 (2.37)	(3.54) 7.89 (3.58)	(1.81) 3.86 (1.75)	(2.71) 5.84 (2.65)	2.91 (1.32)	*4.19 (1.90)	2.51 (1.14)	(1.31) *2.98 (1.35)	24.93' (7.60)	
ucket:	3.28 ft (1 m)					6.99 (3.17)	10.98 (4.98)	4.98 (2.26)	7.65 (3.47)	3.73 (1.69)	5.69 (2.58)	2.84 (1.29)	4.41 (2.00)	2.51 (1.14)	*3.15 (1.43)	24.77' (7.55)	
PCSA: 0.77 yd <sup>3</sup> (0.59 m <sup>3</sup> )	0 ft (Ground)					6.75 (3.06)	10.69 (4.85)	4.81 (2.18)	7.45 (3.38)	3.62 (1.64)	5.58 (2.53)	2.80 (1.27)	4.37 (1.98)	2.60 (1.18)	*3.42 (1.55)	24.08' (7.34)	
CECE: (0.50 m <sup>3</sup> )	-3.28 ft (-1 m)			10.69 (4.85)	*11.88 (5.39)	6.66 (3.02)	10.60 (4.81)	4.72 (2.14)	7.34 (3.33)	3.55 (1.61)	5.51 (2.50)	(	(	2.84 (1.29)	*3.84 (1.74)	22.83' (6.96)	
hoes: 20" (500 mm)	-6.56 ft (-2 m)	*11.44 (5.19)	*11.44 (5.19)	10.76 (4.88)	*16.23 (7.36)	6.66 (3.02)	10.60 (4.81)	4.70 (2.13)	7.34 (3.33)	3.55 (1.61)	5.51 (2.50)			3.33 (1.51)	*4.50 (2.04)	20.87' (6.36)	
(100 mm)	-9.84 ft (-3 m)	*13.36 (6.06)	*13.36 (6.06)	10.91 (4.95)	*14.66 (6.65)	6.77 (3.07)	10.71 (4.86)	4.78 (2.17)	7.41 (3.36)					4.32 (1.96)	*5.71 (2.59)	17.91' (5.46)	
	-13.12 ft (-4 m)			11.20 (5.08)	*11.24 (5.10)	6.97 (3.16)	*8.93 (4.05)										
	19.69 ft (6 m)							*4.78 (2.17)	*4.78 (2.17)					*2.56 (1.16)	*2.56 (1.16)	21.56' (6.57)	
	16.40 ft (5 m)							*5.56 (2.52)	*5.56 (2.52)	4.17 (1.89)	*4.25 (1.93)			*2.45 (1.11)	*2.45 (1.11)	23.62' (7.20)	
600m: 15.09' (4.60 m)	13.12 ft (4 m)							5.75 (2.61)	*6.04 (2.74)	4.14 (1.88)	*5.53 (2.51)			*2.40 (1.09)	*2.40 (1.09)	25.00' (7.62)	
vrm: 8.27′	9.84 ft (3 m)			*7.65 (3.47)	*7.65 (3.47)	*7.45 (3.38)	*7.45 (3.38)	5.53 (2.51)	*7.14 (3.24)	4.03 (1.83)	6.04 (2.74)	3.00 (1.36)	*4.21 (1.91)	2.40 (1.09)	*2.45 (1.11)	25.82' (7.87)	
(2.52 m)	6.56 ft (2 m)			11.68 (5.30)	*14.29 (6.48)	7.56 (3.43)	*10.23 (4.64)	5.29 (2.40)	7.98 (3.62)	3.88 (1.76)	5.89 (2.67)	2.93 (1.33)	4.50 (2.04)	2.29 (1.04)	*2.54 (1.15)	26.15' (7.97)	
ucket:	3.28 ft (1 m)					7.10 (3.22)	11.11 (5.04)	5.03 (2.28)	7.69 (3.49)	3.73 (1.69)	5.71 (2.59)	2.84 (1.29)	4.41 (2.00)	2.27 (1.03)	*2.69 (1.22)	25.98' (7.92)	
PCSA: 0.72 yd <sup>3</sup> (0.55 m <sup>3</sup> )	0 ft (Ground)			*8.25 (3.74)	*8.25 (3.74)	6.79 (3.08)	10.76 (4.88)	4.83 (2.19)	7.47 (3.39)	3.62 (1.64)	5.58 (2.53)	2.78 (1.26)	4.34 (1.97)	2.36 (1.07)	*2.93 (1.33)	25.33' (7.72)	
CECE: (0.45 m <sup>3</sup> )	-3.28 ft (-1 m)			10.58 (4.80)	*12.65 (5.74)	6.64 (3.01)	10.58 (4.80)	4.70 (2.13)	7.34 (3.33)	3.53 (1.60)	5.49 (2.49)	2.73 (1.24)	4.30 (1.95)	2.56 (1.16)	*3.31 (1.50)	24.15' (7.36)	
hoes: 20"	-6.56 ft (-2 m)	*11.13 (5.05)	*11.13 (5.05)	10.63 (4.82)	*17.75 (8.05)	6.59 (2.99)	10.54 (4.78)	4.65 (2.11)	7.28 (3.30)	3.51 (1.59)	5.47 (2.48)	(	(	2.93 (1.33)	*3.88 (1.76)	22.31' (6.80)	
(500 mm)	-9.84 ft (-3 m)	*15.28 (6.93)	*15.28 (6.93)	10.76 (4.88)	*15.96 (7.24)	6.66 (3.02)	10.60 (4.81)	4.67 (2.12)	7.32	3.55 (1.61)	5.51 (2.50)			(	(	(0.00)	
	-13.12 ft (-4 m)	(0170)	(0170)	11.00 (4.99)	*13.07 (5.93)	6.81 (3.09)	*10.30 (4.67)	4.83 (2.19)	7.47 (3.39)	(1.01)	(2.00)						
			1								1				1		
	19.69 ft (6 m)									*3.26 (1.48)	*3.26 (1.48)			*2.34 (1.06)	*2.34 (1.06)	23.43' (7.14)	
	16.40 ft (5 m)									4.34 (1.97)	*4.52 (2.05)			*2.25 (1.02)	*2.25 (1.02)	25.33' (7.72)	
800m: 15.09' (4.60 m)	13.12 ft (4 m)							*4.96 (2.25)	*4.96 (2.25)	4.30 (1.95)	*4.98 (2.26)	3.17 (1.44)	*3.90 (1.77)	*2.23 (1.01)	*2.23 (1.01)	26.61' (8.11)	
vrm: 9.88'	9.84 ft (3 m)					*5.36 (2.43)	*5.36 (2.43)	*5.69 (2.58)	*5.69 (2.58)	4.17 (1.89)	*5.60 (2.54)	3.13 (1.42)	4.72 (2.14)	2.23 (1.01)	*2.25 (1.02)	27.36' (8.34)	
(3.01 m)	6.56 ft (2 m)			*12.04 (5.46)	*12.04 (5.46)	7.83 (3.55)	*9.06 (4.11)	5.45 (2.47)	*7.61 (3.45)	4.01 (1.82)	6.02 (2.73)	3.04 (1.38)	4.61 (2.09)	2.12 (0.96)	*2.31 (1.05)	27.66' (8.43)	
Bucke:t	3.28 ft (1 m)					7.30 (3.31)	*11.29 (5.12)	5.16 (2.34)	7.85 (3.56)	3.84 (1.74)	5.82 (2.64)	2.93 (1.33)	4.50 (2.04)	2.09 (0.95)	*2.45 (1.11)	27.53' (8.39)	
PCSA: 0.52 yd <sup>3</sup> (0.40 m <sup>3</sup> )	0 ft (Ground)			*10.58 (4.80)	*10.58 (4.80)	6.88 (3.12)	10.87 (4.93)	4.89 (2.22)	7.56 (3.43)	3.68 (1.67)	5.64 (2.56)	2.84 (1.29)	4.41 (2.00)	2.16 (0.98)	*2.65 (1.20)	26.94' (8.21)	
CECE: 0.33 m3	-3.28 ft (-1 m)			10.49 (4.76)	*12.63 (5.73)	6.66 (3.02)	10.60 (4.81)	4.74 (2.15)	7.36 (3.34)	3.57 (1.62)	5.53 (2.51)	2.78 (1.26)	4.34 (1.97)	2.31 (1.05)	*2.95 (1.34)	25.82' (7.87)	
hoes: 20" (500 mm)	-6.56 ft (-2 m)	*9.88 (4.48)	*9.88 (4.48)	10.47 (4.75)	*17.20 (7.80)	6.55 (2.97)	10.49 (4.76)	4.65 (2.11)	7.28 (3.30)	3.51 (1.59)	5.47 (2.48)	2.76 (1.25)	4.30 (1.95)	2.58 (1.17)	*3.40 (1.54)	24.15' (7.36)	
(500 mm)	-9.84 ft (-3 m)	*14.99 (6.80)	*14.99 (6.80)	10.56 (4.79)	*17.17 (7.79)	6.57 (2.98)	10.49 (4.76)	4.63 (2.10)	7.28 (3.30)	3.51 (1.59)	5.47 (2.48)	(1.20)	(1110)	3.11 (1.41)	*4.14 (1.88)	21.75' (6.63)	
	-13.12 ft (-4 m)	*19.91 (9.03)	*19.91 (9.03)	10.76 (4.88)	*14.88 (6.75)	6.68 (3.03)	*10.63 (4.82)	4.72 (2.14)	7.36 (3.34)	(1.07)	()			4.19 (1.90)	*5.60 (2.54)	18.31' (5.58)	

Notes: 1. Ratings are based on SAE J1097.

- Lifting capacity of the Super EX Series does not exceed 75% of tipping load with the machine on firm, level ground or 87% of full hydraulic capacity.
   The load point is a hook (not standard equipment) loaded on the back of the bucket.
- 4. \* Indicates load limited by hydraulic capacity.
   5. English measurements are rounded based on metric originals

### Standard Equipment Standard equipment may vary by country, so please consult your Hitachi dealer for details.

CAB

Seat belt

Ashtray

Floor mat

Heater

digital clock

· Auto-idle switch

Cigarette lighter

Glove compartment

• Pilot control shut-off lever

Parcel pocket

### ENGINE • H/P mode control

- E mode control
- 40 A alternator
- · Dry-type air filter with evacuator valve (with safety element)
- Cartridge-type engine oil filter
- Cartridge-type engine oil
- bypass filter
- Cartridge-type fuel filter
- Air cleaner double element
- Radiator and oil cooler with
- dust protective net Radiator reserve tank
- Fan guard
- Isolation-mounted engine Auto-idle system

### HYDRAULIC SYSTEM

- Work mode selector
- E-P control system
- Quick warm-up system for
- pilot circuit
- Shockless valve in pilot circuit
- Boom-arm anti-drift valve
- Control valve with main relief valve
- Extra port for control valve
  - Air conditioning Hot & Cool box
- Suction filter · Full-flow filter
- Pilot filter

## Optional Equipment Optional equipment may vary by country, so please consult your Hitachi dealer for details.

- Hose rupture valves
- Electric fuel refilling pump
- Swing motion alarm device with lamp
- Additional pump
- Piping kit for extra valve port
- Auto-lubrication system
- Pre-cleaner
- Tropical cover

- Track guard
- 0.72 yd3 (0.55 m3: PCSA heaped) Level pin-
- reinforced bucket
- One-point ripper for ripping hardpan

CAB		<ul> <li>Travel motion a</li> </ul>
All-weather sound-suppressed	MONITOR SYSTEM	UNDERCARRIA
steel cab	Meters:	<ul> <li>Travel parking b</li> </ul>
<ul> <li>Reinforced, tinted (bronze color)</li> </ul>	Hourmeter, engine coolant	<ul> <li>Travel motor cor</li> </ul>
glass windows	temperature gauge, fuel meter	<ul> <li>Hydraulic track</li> </ul>
<ul> <li>6 fluid-filled elastic mounts</li> </ul>	<ul> <li>Warning lamps:</li> </ul>	<ul> <li>Bolt-on sprocke</li> </ul>
<ul> <li>Front windows-upper, and lower</li> </ul>	Alternator charge, engine oil pres-	<ul> <li>Upper rollers ar</li> </ul>
and left side windows can be opened	sure, engine overheat, air cleaner clog, minimum fuel level	Reinforced track
Intermittent retractable	Pilot lamps:	FRONT ATTACH
windshield wipers	Engine preheat, engine oil level,	<ul> <li>HN bushing (sp</li> </ul>
Front window washer	engine coolant level,	<ul> <li>Bucket clearance</li> </ul>
<ul> <li>Adjustable reclining suspension</li> </ul>	hydraulic oil level	<ul> <li>Monolithically descent of the second s</li></ul>
seat with adjustable armrests	Alarm buzzers:	<ul> <li>Centralized lubi</li> </ul>
Footrest	Engine oil pressure, engine	<ul> <li>Dirt seals on all</li> </ul>
Electric double horn	overheat	• 8'3" (2.52 m) ar
<ul> <li>Auto-tuning AM/FM radio with</li> </ul>		
	T T G T T G	100000111000

### LIGHTS

• 2 working lights

### UPPERSTRUCTURE

- Undercover
- 4,960 lb (2 250 kg) counterweight
- · Fuel level float
- Hydraulic oil level gauge
- Tool box
- Rearview mirror (right side)
- Swing parking brake

#### larm device GE

- orake
- overs
- adjuster
- nd lower rollers
- k links with pin seals

### IMENTS

- pecified country only)
- ce adjust mechanism
- cast bucket link A
- rication system
- l bucket pins
- rm

#### MISCELLANEOUS

- Standard tool kit
- Lockable machine covers
- Lockable fuel filling cap
- Skid-resistant tapes and handrails

• Front glass lower guard • Reinforced undercover for upperstructure

• Clamshell bucket for deep vertical excavations such as manholes, pilings, footings, etc.