

ANNEX "C" KNUCKLE BOOM TRUCK DELIVERABLES

7 METRIC TONNE KNUCKLE BOOM CRANE TRUCK WITH ROLL OFF HOIST

SPECIFICATIONS		YES	NO	DEVIATION
GENERAL REQUIREMENT/CHARACTERISTICS				
1	Make:			
2	Model:			
3	Chassis:			
4	Need: current need is for a crane truck with the attachments to assist the drainage team with the cleaning of local canals and drainage pits, truck hauls debris from drainage pits and canals. Need mechanisms for roll-on/roll-off container movement.			
VEHICLE DIMENSIONS AND WEIGHT				
5	Overall length: not exceeding 315 inches			
6	Overall width: not exceeding 94 inches			
7	Overall height: not exceeding 10 foot 2 inches			
8	Gross vehicle weight (fully loaded): not exceeding 36,000 lbs.			
9	Engine capacity: not exceeding 6,000 c.c.'s			
10				
FRAME AND EQUIPMENT				
11	Steel Rails and Steel Cross members: 10-1/4 inch			
12	Wheelbase: 138 inches to 146 inches			
13	Frame Components BOC to Rear Front Spring Hanger: bolted			
14	EOF Square without crossmember; for use with body builder installed crossmember			
15	Include: mud flaps, side storage boxes and hangars			
FRONT AXLE AND EQUIPMENT				
16	Front Axle: 12,000 lb. Axle is designed for applications with a gross axle Weight rating (GAWR) of 12,000 lb. The axles should have exclusive one-piece forged Knuckle including steer arm, tie rod arm and spindle. This feature helps in greater reduced maintenance.			
17	Springs: Taper Leaf Springs, Shocks 12,000 lb			
18	Steering: Power Steering, 12K Capacity, Single Power			
19	Hubs: Hubs-Air Disc or equivalent			
20	Brakes: Air Disc Front Brakes, complies with reduced stopping distance regulations.			
REAR AXLE AND EQUIPMENT				
21	Rear Axle: 21,000 lb			
22	Hubs: Iron Hubs, 11-1/4 inch bolt circle. Provide extended coverage up to 3 years/ Years / 350,000 miles for bearings and seals or equivalent.			
23	Brakes: Drive Axle(s). Recommend Standard Stroke Parking Brakes.			
24	Differential Lock: Rear-Rear or Single Drive Axle (Air Rocker Switch occupies the space of Guage) recommend.			
25	Drive Axle(s): Gusseted Cam Brackets or equivalent			
26	Spring Brake Modulation Valve: recommend a spring brake modulation (SBM) system for Emergency braking application. This system requires an SBM valve and a relay valve with Brakes on the rear axles. The SBM valve allows the foot valve to operate the rear axle Brakes if a failure exists in the rear air system.			
27	Electronic Braking System: Electronic Baking System with AntiLock Brakes and ATC			
28	Drum Brakes: Air Cam Rear Drum Brakes 16.5x7, includes Automatic Slack Adjusters and Out board Mounted Brake drums.			
29	Axle Ratio: recommend a Ratio 6.50 Rear Axle			
30	Taper Leaf: Taper Leaf 21,000 lb			
31	Shock Absorbers: Heavy-Duty Shock Absorbers – single drive suspension Drive suspension.			

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ENGINE AND EQUIPMENT				
		YES	NO	DEVIATION
32	Engine capacity: not to exceed 6,000 c.c.’s			
33	Efficiency: (2018) Emissions) include aluminum flywheel housing, cruise control, provide Interface point for Electronic Service Analysis and other approved diagnostic tools.			
34	Oil Drain plug: ensure oil engine oil plug is magnetic, it captures and holds any metal fragments in engine oil to extend service life.			
35	Engine oil: ensure engine oil is specially formulated for new low emissions engines.			
36	Engine and Equipment, recommended: Standard Maximum Speed Limit, Expiration distance, hard maximum speed limit, maximum accelerator pedal, speed limit, Accelerator, pedal vehicle speed, maximum cruise speed, reserve speed function reset Maximum cycle distance, maximum active distance, reserve speed limit offset, engine Shut down, gear down protection, Max PTO speed, cruise control auto resume, auto engine In cruise, expiration distance, enable idle shut down park brake set, timer setting, enable Impending shut down warning, timer for impending shutdown warning, engine load Shutdown manual overrule, enable hot ambient automatic overrule, low ambient threshold, intermediate ambient temperature threshold, high ambient temperature threshold.			
37	CARB Engine Idling Compliance: include the required factory installed serialized sticker on Door to identify them as meeting the NOx idling standard.			
38	Alternator: 160 amp Alternator, Brushed recommended.			
39	Cold Start: Cold start Engine Grid Heater, effective to -4 F / -20 C			
40	Starter: 12V Delco starter or equivalent			
41	Battery: 2 Premium 12V Dual purpose Battery 1460 CCA or equivalent, threaded stud type terminal. Stranded copper battery carles are double aught (00) or larger to reduce resistance.			
42	Battery Switch: Battery Disconnect Switch, mounted on battery box.			
43	Clutch fan: Viscous Type Fan Clutch			
44	Air Compressor: must be able to produce 18.7 CFM and must have Teflon lined stainless Steel braided compressor discharge lines.			
45	Cooling System: preferred cooling module should be a combination of steel and aluminum Components, with aluminum connections to maximize performance and cooling capability. Please provide silicone based radiator and heater hoses that will enhance value, durability And reliability. Include constant tension band clamps to reduce leaks. Use ClimaTech Coolant or equivalent to reduce maintenance costs. Anti-freeze effective to -30 degrees F Helps protect the engine. Provide low coolant level sensor’s, which will warn of low level Coolant conditions and prevent engine damage. Suggested radiator sizes by Model: 587: 1330 sq in, 579/367 FEPTO 1325sq in, 567/365/367: 1440 sq in, 384/386: 1301 sq in, 365 FEPTO: 1184 sq in, 389/367 HH: 1669 sq in, 348: 100 sq in, 320: 1242 sq in.			
46	Air Cleaner: minimum of 1 Air Cleaner fender Mounted RH BOC			
47	Air Intake: High Air Intake			
48	Exhaust: single RH Horizontal Exhaust Under Frame.			
TRANSMISSION AND EQUIPMENT				
49	Transmission: Preferred Allison – Generation 5, rugged duty deries, TranSynd Automatic transmission Fluid, and Water Oil Heat Exchanger. Include features that monitor the transmission fluid, filter and clutch condition. Ensure the displays are installed which show indicate the life remaining for the transmission fluid, filter and clutches on the shift selector. information can be displayed using the Mode and up and down buttons. Provide icons to			

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	indicate when the transmission fluid, filter or clutches need servicing.			
50	Driveline: recommended SPL100 Driveline, and minimum of 1 Midship Bearing			
51	PTO Controls: preferred dash mounted PTO switch and chassis harness to PTO			
52	Recommendation Allison FuelSense Basic: include 5th Generation Controls, Controls, Dynamic Shift Sending.			
53	Transmission Console: recommendation provide Console Mounted Push Button Shifter Allison transmissions.			
54	Gear Ratio: recommendation provide Allison 5-Speed Configuration, wide Ratio Gears Allison 3500 Transmission.			
AIR AND TRAILER EQUIPMENT				
55	Air Dryer: Air Dryer w/Heater and Coalescing Filter			
56	Air Tanks: all air tanks should be steel with painted finish except when Code 4543330 Polish Aluminum Tanks is selected (then exposed air tanks outside the frame rails will be polished Aluminum). Builder will determine the optimal size and location of required air tanks.			
TIRES AND WHEELS				
58	Recommended Tires and Wheels: FF: BR 16ply 255/70R22.5 R250ED. Diameter = 36.7 inches; SLR = 17.2 inches			
59	Recommended Tires and Wheels: RR: BR 16ply 255/70R22.5 M726. Diameter 37.3 inches; SLR =17.4 inches Rear Tire Quantity four (4)			
60	Recommended Tires and Wheels: FF: Steel Armor PK 22.5X8.25 2 hand holes			
61	Rear Rim Quantity four (4)			
FUEL TANKS				
62	Fuel Tank Recommendation: 45 Gallon Rectangular Fuel Tank LH BOC; Location LH BOC 45 Gallon			
63	DEF Tank location recommended: Mounted LH BOC			
64	Recommended DEF Fuel Ration: Standard DEF to Fuel Ration 2:1 Or greater			
BATTERY BOX AND BUMPER				
65	Steel Battery Box: recommended location RH BOC; can be mounted on the RH frame rail.			
66	Battery Box Cover: Aluminum			
67	Steel Bumper: Painted Grey			
CAB AND EQUIPMENT				
68	Cab: Steel RH Drive, Cab Over Type			
69	Recommended Seating arrangement: Driver Seat, Passenger Seat, Third Passenger Seat Air Ride Driver High Back Driver Fabric Driver Air Ride Passenger High Back Passenger Fabric Passenger Jump Seat passenger Fabric Passenger Adjustable Steering Column – Tilt Only Rear Wall Storage			
70	Interior Gray: include view window in RH door and 18 inch 4-spoke foam soft-touch steering Day Cab Rear Window One Piece Curved Windshield Electric Powered Window Lift, LH/RH			
71	Recommended Heater/Air conditioner requirements: Combo Fresh Air Heater/Air Conditioner with Radiator mounted condenser, dedicated side window defroster, Bi=Level Heater/Defroster			

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	54,500 BTU/HR, and silicone heater hoses.			
72	Mirrors: LH/RH Driving Mirrors Heated/Motorized			
73	Radio: AM/FM			
74	Wipers: Electric Windshield Wipers with intermittent Feature			
75	Back up Alarm: Back up alarm Wiring to EOF			
76	Back up Camera: Back up camera Wiring to EOF			
77	Air Restriction Indicator: Recommended mount location on air cleaner, intake piping or firewall			
78	Speedometer: Dual Scale Speedometer MPH OVER KPH			
79	Headlights: Dual Round Halogen, Integral Turn Signals, left aiming headlights			
	Five (5) Marker Lights			
	Stop/Tail Turn/Backup Lights RH/LH			
	Strobe Light on Truck Roof and Spot Light on Truck Cab			
PAINT				
80	Recommended Paint Features: Axalta Single Stage Non-Metallic Cab/Hood			
	Solid Color Paint			
	N85020 A – M8870EA ICE WHITE			
	N85200 FRAME N0001EA Black			
ROLL-OFF HOIST				
81	Hoist Roll minimum Capacity: 25,000#, Extendable Tail, Reeving Single Axle Roll-Off Hoist			
82	Recommended Standard Features: Steel Hydraulic Reservoir, Single Axle Poly Fenders, Inside			
	For 2 Spool Valve, 2 Spool Valve, Rear Vision Camera System w/monitor mounted on dash in cab,			
	Installation and Finish Paint, Including: back-up Alarm and truck frame modification, PTO for			
	Transmission, Ratchet Hold Down Straps, Bumper with recessed LED lights and ICC Bumper,			
	Lights Mounted in Rear Bumper, Dump Capacity to Carry 5 Metric Tonnes. Recommended -			
	Galbreath Hoist.			
KNUCKLE BOOM CRANE				
83	Capacity: Recommendations; 7 Metric Tonnes, Pick Up, 2,020LB at 40 foot (Max Reach).			
	5 Hydraulic Extensions on Outer Boom, Radio Remote Controls, 2 Hydraulic Out and			
	Down Outriggers, Hydraulic Tank and Pump with Radio Transmitter and Charger.			
84	Attachments required: Small Clam Shell Bucket and Large Clam Shell Bucket.			

Warranty

WARRANTY			
A. Body			
i) complete unit (state actual warranties)			
a) parts (minimum 12 months)			
b) labour (minimum 12 months)			
B. Start at Bermuda Government, Ministry of Public Works "IN SERVICE" date			
C. Warranty is to be FOB Bermuda			
i) factory authorized warranty facility to be Quarry Depot, Ministry of Public Works, Bermuda.			

Manuals, Brochures and Training

24. MANUALS, BROCHURES AND TRAINING			
A. Manuals			
i) Operator manual - 1 copy for unit ordered (English)			
ii) Workshop Manual - 1 copy for unit ordered			
iii) Parts manual -1 copy for unit ordered			
B. Provide current brochure on vehicle and options			
C. Provide "line sheet" for unit on delivery, detailing component details, belt part #'s, filter numbers, etc. to assist with future parts and service issues			
D. A pre-build meeting shall be held via teleconference or in person approximately 2 weeks after award of tender			
E. Project progress reports			
i) the winning vendor at point of construction is to provide a production schedule			
iii) the first report will be at approximately the 50% completion point			
iv) the second report will be at approximately the 85% completion point			
vi) the reports are to show where the project is on the production schedule and if on, behind, or ahead of schedule			
vii) photos and other related information to be included in the email as required			
F. Training - detail the level of training provided at delivery of the unit, both for the operators and mechanics in Bermuda			
G. Online and telephone technical support direct from the manufacturer available to Quarry Depot for the lifetime of the vehicle.(15 years)			
H. All operating manuals, workshop manuals, technical back-up and training to be provided in the English language.			

Vendor to provide certified technical assistance training for Public works Mechanics. The training should include the following:

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Web based training for;

- Service
- Parts
- Warranty
- Online tests for 2 year re-certifications

Hands-On Tiered Courses include:

- Electronics Controls
- Engine
- Diagnostics
- Applicable Software
- Policy and Procedures

Purchase of on-the-lot or Low Hour Used Equipment

22.	PURCHASE OF ON-THE- LOT or LOW HOUR USED EQUIPMENT			
	The Ministry of Public Works is interested in pursuing the option			
	of buying "low hours", on - the - lot or demonstrator equipment.			
	if in the best interest of the Government of Bermuda			
	Minor variations from the specifications will be considered			
	If you have any which you feel meets the specifications, please			
	complete a separate tender form, including full specifications			
	and any deviations.			
	A. Maximum 500 hours on unit. Specify actual --->			
	B. Full chassis warranty is required			
	C. Please complete pricing sheet for each unit available			

Spare Parts Requirements

SPARE PARTS REQUIREMENTS				
	Maximum fork height (top of forks)			
	Fuel filters			
	Air filters			
	Oil filters – Motor/Hydraulic etc.			
	Brake pads/shoes (complete axle set front \$.....and rear \$.....)			
	Wheel cylinders/caliper (front each axle set\$..... rear each axle set \$)			
	Brake discs/drums (front each axle set\$..... rear each axle set \$)			

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E. Spares available for at least 15 years with prices held to above plus increases in line with the consumer price index			
F. Spares available from East Coast North America with national distribution and warehousing			
G. Provide Bermuda's user's list for this type of unit. Telephone numbers and contact names may be required to confirm performance and suitability of unit in our operating conditions			

Shipping Information

ITEM	SPECIFICATIONS	YES	NO	DEVIATION
	iii) all travel and carriage costs			
	iv) all insurance costs			
	v) all bonding costs			
	vi) all costs of delivery to the Town			
	vii) all costs of installation and set-up, including any pre-delivery inspection charges and all other			
	viii) including any fees or other charges required by law			
	B. Change orders			
	i) work on changes or additions can not start until the change is approved through the appropriate levels within the City			
	ii) all changes requested must be approved through the City Fleet Services department prior to commencing work			
	iii) the vender can start work on the requested change once the PO has been adjusted to include all new items and costs and after instructed by City Fleet Services personnel			
	C. Completed vehicle supplied in compliance with Bermuda Motor Traffic Act, Environmental and TCD regulations			
	D. Delivered vehicle to be ready for motor vehicle registration in Bermuda, including all inspections as required.			
	if iii) out of country			
	- certificate of origin			
	- recall letter			