

AMENDMENT No-1

Kindly be informed that, as per Articles 6 & 7 of the bid document, the following amendments and supplemental bulletins have been made to the Bidding Document **No: NCSC- 0001/18**.

1. Name of contract: “Supply and Delivery of Two hundred Twenty (220) Units of Semi-trailer trucks.”

2. The Procuring Entity: NATIONAL CEMENT SHARE COMPANY (NCSC).

3. Contract Identification Number: NCSC- 0001/18

4. Amended Articles:

4.1.

Section-I, ITB No-2 & Section-III, BDS reads “.....**220 semi-trailer trucks...**” This is amended as follows:

“ **170 semi-trailer high bed trucks and 50 semi-trailer high bed dump trucks**

4.2. Section-1, ITB No-9 & Section-III, BDS clause 18 read “.....on or before **February 11/2018 at 9:00am**.

This is amended as follows: “..... on or before **March 07/2018 at 9:00 a.m.**”

4.3. Section-1, ITB No-10 & Section-3, BDS clause 21.1 reads “.....**February 14, 2018 9:30 a.m.** This is

amended as follows: “..... **March 12/2018 at 9:00 a.m.**”

4.4. In section-II, article 3.6 of the ITB reads “Before submitting their bids, the Bidder is deemed to have become familiar with all existing laws, decrees, ordinances, acts and regulations of the **Philippines** which may affect this Project in any way.” **This is amended as below** “ “Before submitting his/her bids, the Bidder is deemed to have become familiar with all existing laws, decrees, ordinances, acts and regulations of **Ethiopia**, which may affect this Project in any way.”

4.5 In Section-II, sub-article 11.1, reads “Advance payment shall be made only after prior approval by the CEO of NCSC and shall not exceed **fifteen percent (30%)** of the Contract amount, unless otherwise directed by the CEO;” This is amended as below. “Advance payment shall be made only after prior approval by the CEO of NCSC and shall not exceed **thirty percent (30%)** of the Contract amount, unless otherwise directed by the CEO;”

4.6. In Section-II, sub-article 12.3. Reads: “Prices indicated on the Price Schedule shall be quoted at **DDP price – Addis Ababa, Ethiopia.**”. This is amended as follows: “**DDP price – Dire Dawa, Ethiopia or CFR - at Djibouti free zone**”.

4.7. In Section-II, sub-article 12.4.b. (I). reads “..... Quoted DDP with the place of destination in Ethiopia

” This is amended as follows: “...**DDP price – Dire Dawa, Ethiopia or CFR - at Djibouti free zone.....**”

4.8. In Section-II, sub-article 13.c states “Unless otherwise specified in the **BDS**, payment of the contract price shall be made **in Birr.**” This is amended as follows: “Unless otherwise specified in the **BDS**, payment of the contract price **for local bidders and foreign bidders shall be made in Birr and in USD, respectively.**”

4.9. In Section-3, BDS, under clause 10.b, the following is stated under “Particulars” section: “No incidental services are required. 10(b) Not applicable. 16.1(b) The Bid prices for Goods supplied from outside of the Philippines shall be quoted in Philippine Pesos”. This statement is modified as follows: **“No incidental services are required. 10(b) Not applicable.”**

4.10. In “Section VI: Schedule of Payment” the table put states as follows:

Description	Quantity	Delivered, Weeks/Months
SEMI TRAILER TRUCK	220	Not later than 90 calendar days upon receipt of the Notice to Proceed
CONSUMEBELE SPARE & FIELD KITS FOR TRUCKS	43 line items listed under B. Technical Specification	Not later than 90 calendar days upon receipt of the Notice to Proceed

This above table is replaced amended and replace by the following two tables:

Table-1

Description	Quantity	Delivered, In days
SEMI TRAILER TRUCK	170	Not later than 90 calendar days upon receipt of the Notice to Proceed
CONSUMEBELE SPARE & FIELD KITS FOR TRUCKS	43 line items listed under B. Technical Specification	Not later than 90 calendar days upon receipt of the Notice to Proceed

Table-2

Description	Quantity	Delivered, in days
SEMI TRAILER DUMP TRUCK	50	Not later than 90 calendar days upon receipt of the Notice to Proceed
CONSUMEBELE SPARE & FIELD KITS FOR TRUCKS	43 line items listed under B. Technical Specification	Not later than 90 calendar days upon receipt of the Notice to Proceed

4.11. In section-VI of the bid document: technical specification is placed. Please understand that this table (Table-1) refers to the **170 semi- trailer high bed trucks.**

Below, please find this additional technical specification for the “50 Semi-trailer Dump Trucks”

TABLE-2 TECHNICAL SPECIFICATION FOR “170 SEMI- TRAILER HIGH BED TRUCKS AND 50 SEMI-TRAILER DUMP TRUCKS”

SN	Item Specification	Statement of Compliance
		Bidders must state here either “Comply” or “Not Comply” against each of the individual parameters of each Specification stating the corresponding performance

		parameter of the equipment offered. Statements of “Comply” or “Not Comply” must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer’s un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidders statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the provisions of ITB Clause 3.1(a)(ii) and/or GCC Clause 2.1(a)(ii)
Heavy duty truck Chassis Cab, 6X4 Specifications		
1	FUNDAMENTAL REQUIREMENTS	
1.1	Scope	It describe heavy duty truck, 6x4 chassis cab suitable for towing a 3-axle semi-trailer and that have a capacity to carry 40 ton. The truck-semi-trailer combination shall be of not less than 60 metric tons gross combination weight. Power truck dimension : L*W*H :6.7x2.5x3.1m, where H is the height from the ground up to the top of cabin.
	The chassis cab shall have the following basic parameters:	
	• Engine:	430HP
	• Gross vehicle semi-trailer weight	not less than 60 metric tons
	• Pay load	40 metric tons
	• Truck Wheel Base	4000 mm
	• Truck width	2.50 meter
	• Drive type	6x4,tandem rear axle drive
	• Power plant	water cooled, Turbo ,inter-cooled, diesel Engine
1.2	Service Requirements:	The chassis cab described herein shall be used for transporting general cargo, including heavy concentrated loads, on and off (extremely rough) roads in Ethiopia and neighboring countries where:
		<ul style="list-style-type: none"> • Temperature ranges from 0°c-50°c • Climate varies from humid tropics to arid deserts • Altitude Varies from sea level up- to an average of 2500m high
		All mountings, supports, bolts and suspensions and all other components shall be of the heavy-duty design to resist the shocks and vibrations induced by the extremely rough and poorly maintained paved roads.
1.3	Warranty (Fundamental):	The manufacturer shall guarantee that all parts and materials used for the construction of the vehicle be new, of high quality and good workmanship.

		The manufacturer shall undertake to replace or repair any part or component of the vehicle that fails or breaks due to defective material or workmanship while the vehicle is operated as per the service requirements for a minimum period of two years or 300,000 km from the date the truck is put in to operation. The cost of transporting, replacing/fitting, repairing and any incidental costs (labor + material cost), up to and where the vehicle is stranded shall be borne by the Seller.
1.4	Parts List:	Manufacturer's recommended fast moving spare parts list with price to a value of 3% of the vehicle shall be given as part of the offer. The list should include consumable spare parts and field kits enough for two year. (The required consumable spare parts and field kits is attached in separate sheet).
1.5	Field kit of spare parts:	Manufacturer's standard field kits shall be supplied with the vehicle. List of such parts with unitary and total price shall be given with the offer.
1.6	Run-in service:	The manufacturer or his delegate/dealer shall provide pre-delivery service, i.e.: washing, lubricating, inspecting and correction service before the truck is put into operation without any cost (labor + material) to the buyer at final destination.
2	ENGINE:	(Engine: 430HP)
2.1	General Requirements:	The engine to be supplied shall perform smoothly and efficiently under the conditions described herein and shall develop the rated horsepower when operated with commercial diesel fuel available in the local market.
2.2	Engine Type (Fundamental):	The engine shall be four stroke cycle, water-cooled, turbo charged, inter-cooled, six cylinders, BOSCH high pressure common rail type with replaceable cylinder sleeves (dry type).
2.3	Performance:	The engine shall be capable of sustained operation at 80 kilometers per hour with the unit fully loaded on a smooth, dry level road condition without any evidence of being overloaded. The engine shall be capable of operation under all conditions specified in the service requirements. The engine should designed and manufacture to with stand extremely up and hill topography of Ethiopia.
2.4	Horse power and Torque rating:	The engine shall deliver a power of 430 HP at a Governed R.P.M of not more than 2000, at sea level, with all required accessories. <ul style="list-style-type: none"> • Certified engine data which shall show net horsepower and torque performance curves both at sea level and at 2500 meters elevation. • Fuel consumption curve which shall be obtained when the unit is operated at the most economical speed, fully loaded to its gross combination weight (GCW) rating, on smooth

		level road, both at sea level and 2500 m elevation.
2.5	Lubrication System:	The manufacturer's current standard production fully forced feed type, gear driven engine lubrication system shall be accepted.
3	FUEL SYSTEM:	
3.1	Fuel Tanks:	The vehicle shall be equipped with two fuel tanks with a combined capacity of 600 liters minimum. Fuel tanks shall be mounted on each side of the chassis frame. Fuel shall be drawn to the fuel pump from each tank simultaneously. Fuel tanks shall be properly ventilated and shall incorporate baffled sump to collect water formed by condensation. Fuel tanks support brackets and retaining straps shall be of a heavy duty type to resist the extreme rough road vibrations. Fuel tank caps shall be lockable. (The fuel tank caps should only permit to enter fuel but not to draw out from it). Each tank shall have a cable support (covered with vinyl) mounted in such a way that it will share the weight of the tank when filled to capacity.
3.2	Filters:	Fuel filters shall be of the series coupled double stage type of adequate capacity and construction for the size and type of engine to be fitted and shall have a water separator device . The filters shall be located away from the ambient air stream preferable in the engine compartment. They shall be accessible for quick maintenance . Fuel filters shall be equipped with pre-filter and water drain valve.
4	COOLING SYSTEM:	
4.1	General Requirements:	The cooling system shall be of the closed, pressurized pump forced, water medium with ample capacity to permit continuous full load operation without boiling under the conditions specified in the service requirements herein.
4.2	Thermostat:	The cooling system shall be fitted with an efficient thermostat to ensure prompt (rapid) warming of the engine. The thermostat shall have minimum/maximum, opening/closing settings to meet operating conditions in Ethiopia.
4.3	Radiator:	The radiator shall be of extra heavy-duty type construction, with over-flow tank protection. It shall be mounted in such a way as to withstand shocks & strains likely to be encountered under normal operating conditions throughout Ethiopia. The radiator shall have adequate capacity and flow area, plus 10 percent compensation for altitude and temperatures in Ethiopia.
4.4	Fan:	The cooling system shall have heavy duty, visco-static tropical type fan with shroud for the most efficient engine operation. Fan blades shall be made up of molded PVC . The fan must be belt drive.
4.5	Warning Device:	Within the driver's compartment, an audible and visual warning device shall be installed. The device shall activate when the engine cooling system temperature reaches the maximum temperature set by the engine manufacturer. The device shall

		remain on until the temperature has decreased to a safe operating range.
4.6	Air Intake System:	The Air intake system shall consist of a dry type, two-Stage, Double Element , heavy-duty air cleaner compatible with highly dusty operating conditions. A restriction gauge (low-pressure indicator) shall be placed on the air cleaning system, and shall be easily readable. An air intake at cab roof height is required. The air cleaner mounting shall be extra heavy duty to withstand the extreme rough road vibrations.
4.7	Exhaust System:	The exhaust system shall be of extra heavy-duty design. The muffler shall be of a semi-trailer truck type. All exhaust pipes and muffler shall be mounted and secured to withstand shocks & vibrations under the operating conditions specified herein. The exhaust stack shall be channeled for Horizontal discharge (Not vertical Not down ward) that is the Exhaust gas must be visible for the driver . Where the exhaust pipe runs, a heat shield (insulation) shall be placed for protection against heat damage
5	ELECTRICAL	
5.1	Charging System:	The charging system shall consist of a 24-volt and minimum of 45-AMP rated alternator. The alternator shall be mounted on the engine as close to the centerline as possible. Heavy-duty type BOSCH alternator is required.
5.2	Batteries:	All batteries shall be permanently identified or labeled with the SAE cold-cranking ampere (CCA) rating. Battery capacity must meet or exceed the engine manufacturer's minimum CCA requirement at 0° F. The acceptable size shall be two heavy-duty 12V, 170AH batteries.
5.3	Battery Mounting:	Batteries shall be mounted under the rear of the cab on the driver's side. Rubber padding, 7-10mm thick, in the bottom of the battery carrier, is required. Batteries in close proximity to the exhaust shall have heat shielding. Carriers, covers, hold-down & hardware shall have acid-resistant coating. Additional cable support covered with vinyl is necessary. Easily removable covers are necessary for regular battery servicing. All Batteries shall be the Rechargeable type .
5.4	Battery Cable Assemblies:	Routing of cables shall avoid heat, abrasion, and vibration. Grommets must be provided when the cable passes through holes in the sheet metal or frame. All bare metal edges shall be shielded.
	N.B: - The battery shall be equipped with an Earth disconnect switch (master switch) located near to the battery.	
6	LIGHTING SYSTEM	
		The lighting system shall consist of, but not limited to: <ul style="list-style-type: none"> • Two adjustable headlights with high and low beams, • Two parking lights, • Two stop and tail light combinations,

		<ul style="list-style-type: none"> • Interior overhead lights, • Instrument panel lights, • Back-up lights, • Reflectors • Clearance lights • Fog lights <p>All the above-mentioned lighting with wiring shall be in accordance with standard manufacturing practices and/or existing international uniform vehicle codes.</p>
	N.B: - Gravel protection grills shall be attached to all exterior lights. The grills shall be of the heavy duty type.	
6.1	Direction signals and Hazard Warning Flashers:	The vehicle shall be equipped with SAE class A type, or equivalent, double faced directional signals. This must be a lamp-type turn signal system capable of clearly indicating any intention of turning in either direction. In addition, four way hazard warning flasher shall be installed, which may be a combination turn signal-hazard warning flasher. Any system used shall project a flashing red light visible to the rear. The signal shall be plainly visible and of sufficient intensity to be effective in normal sunlight, or at night, from a distance of at least 152 meters to the front and rear of the vehicle.
6.2	Direction Signal and Hazard Warning Flasher Switch Mounting:	The required location for the turn signal switch shall be steering column mounted for convenient operation by the driver's left hand. The turn signal switch shall be of the self-canceling type construction. The turn signal indicator lights shall be visible and audible to the driver when the turn signal is activated. The turn signal switch shall be removable for service without removal of the steering wheel.
6.3	Windshield Wipers:	Minimum Dual electrically-operated, three speed windshield wipers and automatic windshield washers shall be installed.
6.4	Horns:	All vehicles will be equipped with <u>twin</u> diesel truck type of horns. The first type will be electrical with activation by the standard steering wheel button-mounted type. The second type will be air operated, with dual bugle horns mounted on the exterior top of the cab. There shall be an activating pull chain located inside the cab above the driver's door, or a foot operated activating device
6.5	Circuit Protection:	Battery cables, starter motor circuits, battery-to generator circuits, and ignition and horn circuits shall be wired without circuit protection. These circuits should utilize cable insulating materials and routing techniques that provided adequate protection against the possibility of short circuit. All other power feed circuits shall have adequate circuit protection, with each circuit having both primary and secondary

		protection devices. Cable and harnesses shall be routed along rigid sections of the cab or chassis. The wiring shall be secured, supported at intervals to prevent rubbing or chafing due to wire movement. Various types of plastic and metal clips, clamps, and ties may be used to support wiring harnesses. When metal support devices are employed, they must be covered or coated with a protective, non-conductive material.
6.6	Starter Motor:	The motor that shall be mounted on the engine should be BOSCH starter motor with a minimum capacity of 6.5 kW.
6.7	Truck to Semi-Trailer Power Supply:	The truck-to- semi trailer power supply shall consist of a seven pole-way coupler power supply cord. ISO type coupler is preferred.
	CAB	
7	General Description:	The cab is to be equipped with all the necessary wiring, gauges, tubing and instrument panel for the efficient operation of the vehicle.
7.1	Cab construction (Fundamental):	<p>The cab shall be constructed so that the roof and floor are insulated against heat and cold. The cab shall be of, high roof, with two sleeper type, hydraulically tilt able, all steel construction.</p> <p>The cabin shall be equipped with double bed, mattress and curtains (with rails). Cabin Suspension shall be positively able to offset the extreme rough road shocks, vibrations and twists.</p> <p>The cabin front lower end clearance should be well above the minimum ground clearance.</p>
7.2	Instrument panel:	<p>The instrument panel shall be equipped at least with the following: -</p> <ul style="list-style-type: none"> • Panel lighting, • Speedometer and odometer (total and resettable) calibrated in kilometers and shall be the non-taco graph type, • Engine temperature gauge, • Lighting control switches, • Oil pressure gauge, • Air pressure gauge, • Engine RPM gauge, • Windshield wiper controls, • Direction signal lamp indicator, • Semi-trailer Air supply (control) valve, • Truck- Semi-trailer parking brake control valve, • Truck (only) parking brake control valve, • Fuel gauge, • Audible and visual oil pressure warning device, • Audible and visual water temperature warning device, • Audible and visual air pressure warning device,

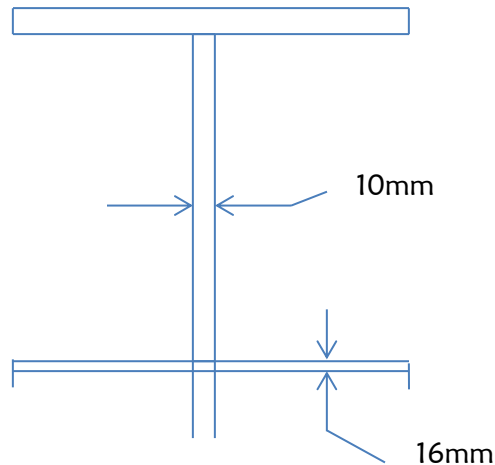
		<ul style="list-style-type: none"> • Engine brake indicator. • Intake air indicator. • Gear shifting indicator • Insures cabin properly seat indicator • Door lock indicator <p>All gauges and controls must be labeled as to their assigned function in English (eg.. air pressure gauge, water temperature gauge, etc).</p>
7.3	Seats:	Heavy-duty seats shall be installed in the cab. The driver seat must be adjustable forward, backward, up and down. Air-type seat suspension shall be used. The passenger seat shall have a permanent mounting; no adjustments are necessary.
7.4	Doors:	Doors shall be steel constructed; fiber glass is not acceptable . Both doors must lock from inside and outside and utilize the ignition key. An arm rest shall be installed on both doors. All braces, joints and parts of the door shall be heavy duty to withstand the extreme rough road vibrations. Window lifter and locks shall be mechanical.
7.5	Glass (Fundamental)	All glasses used in the construction of windshields and windows must be safety glass. Glass should be able to reduce cabin glare and temperature.
7.6	Sun Visors:	Adjustable, interior sun visors shall be installed on both the passenger and driver sides of the cab. They shall be so constructed as to shade the driver's eyes from either the front or side. An external Sun Visor covering the complete width of the wind shield shall also be installed.
7.7	Mirrors:	Large, heavy duty, truck type, mirrors shall be installed on both the left hand and right-hand sides of the vehicle. They shall be so located as to give the driver a rear view of the highway through each mirror for a distance of at least sixty-one meters. The right hand side mirror should also be fitted with a Curve Side Mirror (convex). The brackets and mounting of the brackets shall be extra heavy duty.
7.8	Safety Equipment:	The vehicle shall be equipped with a fire extinguisher mounted in such a location that the driver may reach it from a seat belted position or while standing on the ground with the driver's door open. First aid kit & warning triangle should also be provided.
7.9	Cab mounting Steps:	All cabins with a door-sill more than 60cm off the ground shall be equipped with at least one step. Where the door-sill is at a height greater than 96cm from the ground a second step will be added. Additional steps shall be provided as the height increases. A step should be of sufficient size to accommodate both feet. The steps shall be solidly attached.

7.10	Hand Holds:	At least one grab handle shall be affixed to the cab on both sides of the vehicle. As the number of steps increases, and if an offset ladder arrangement is used, hand-holds will become necessary.
7.11	Cab Tilting Pump and Hoses:	They should be extra heavy duty and compatible with the cabin size and located behind the cabin.
7.12	Air conditioning:	air conditioning is necessarily required
8	STEERING (FUNDAMENTAL):	The vehicle shall be equipped with left-hand-drive steering. ZF power steering (hydraulic power assisted) is required. In the event of a power steering failure a means must be provided for manual control of the vehicle . The hydraulic pump shall be directly driven by the Engine ; belt drive is not acceptable. The steering hose (pipe) must be passed through the radiator so as to cool by the fan.
9	POWER TRAIN	
9.1	CLUTCH:	The manufacture's standard clutch for use with the engine type supplied is acceptable. Detail technical data (Type, construction, function, capacity, etc.) of clutch system shall be provided with offer. The pressure plate will be self-adjusted and pull type diaphragm.
9.2	Transmission: ZF	The transmission shall be ZF transmission extra heavy-duty, properly supported, Manual type with ten forward gears. It shall have a one-speed reverse. Detail technical data on ratios, torque, capacity, speed and proper gear changing controlling mechanisms and devises, etc. shall be submitted with the offer. Current manufacturer's standard model is acceptable with extended warranty coverage. NB: The transmission must be high quality that withstand extremely up and hill roads of the bad topography in Ethiopia.
9.3	Propeller Shaft:	The propeller shaft tubing must be of sufficient size and strength to carry the torque load imposed by the engine.
10	AXLES AND SUSPENSIONS:	
10.1	Front Axle:	The front axle shall be extra- heavy-duty, "I beam" axle. It shall have a min. rated capacity of 8000 kg. All spindles, kingpins, bushings, thrust bearings and wheel bearings shall be properly sized and matched with the front axle rating. The front axle shall also be equipped with a heavy-duty Stabilizer bar .
10.2	Front Springs:	The front spring shall be heavy-duty semi-elliptical type. Heavy-duty, double acting, telescopic shock absorbers shall also be installed. The shock absorber shall be compatible with the axle and suspension design. The manufacturer shall supply the pad rating and all details of springs installed.
10.3	Rear Axles:	The rear tandem (double) axles shall be of the full floating, through drive type with an inter-axle differential mounted on

		<p>the forward axle, transmitted to the rear axle by a connecting shaft. It shall also be equipped with Air-Electrical operated differential lock controlled from the cab by the driver. The rear axles shall have a capacity of 13,000 KGS. Each (26,000kg in tandem).</p> <p>Provision shall be made that differential breathers are not easily blocked with dirt or mud. Magnetic fill and drain plugs shall be installed to the differentials.</p> <p>NB: The axles must be high quality that withstand extremely up and hill roads of the bad topography in Ethiopia.</p>
10.4	Rear Suspensions:	<p>Extra heavy-duty, cantilever tandem suspension springs shall be installed. Spring support brackets, plates, bolts, etc. shall be strong enough to withstand extreme rough road effects.</p> <p>The rear suspension shall be equipped with extra heavy-duty, double acting, telescopic shock absorbers. Axle stays (reaction bar), and torque arms shall be heavy duty. Cross members where axle stays (reaction bar) are fastened to shall be extra re-enforced.</p>
11	WHEELS AND TIRES	
11.1	Wheels (fundamental):	<p>Manufacture's current production heavy-duty single front and dual rear wheels and rims shall be accepted. All wheels and rims are to be interchangeable.</p>
11.2	Tires (Fundamental):	<p>The manufacturer shall supply 12.00 R20 ply rating, tube type, all steel radial (steel belts and steel carcass), on - off highway, heavy-duty tires. In addition the manufacturer shall furnish a spare wheel, tire, tube and flap. Tire inflator stem shall be easily accessible even on dual wheels. Triangle tires are preferable (TR669).</p>
11.3	Spare Tire Carrier:	<p>A reinforced spare tire carrier shall be mounted at a suitable and easily accessible location. (Reserve tire carrier together for power and trailer truck should be designed and mounted under chassis towing trailer truck as fig indicated below).</p>



12	Chassis	
12.1	Frame:	The chassis frame shall be of the extra heavy-duty construction. It should be designed to withstand the heavy loads and extremely rough road, twists, shocks and vibrations. All tubing, wiring, lines and hoses shall be affixed to the chassis frame to prevent hanging loosely or dragging. They shall also be placed so as not to interfere with the propeller shaft operation. Chassis frame and cross members' technical details shall be provided with offer.
12.2	Trailer Truck	Base of chassis frame thickness of trailer truck must be 16mm (see the attached I beam drawing and picture below) Chassis frame side wall (flat form) thickness of trailer truck must be 10mm (see the attached I beam drawing and picture below)





- Minimum thickness corrugated sheet of the side board for normal trailer must be 2mm. (See the attached picture below).



12.3 Trailer leaf spring:

- No of leaf spring must be minimum 11 (for normal & dump truck)
- Leaf spring thickness 13mm (for normal & dump truck)
- three axle trailer
- Tire : 12.00R20, 12+1pieces (TR669)
- Without ABS
- Side board height : 800mm plate(for normal cargo truck)
- corrugated sheet minimum thickness(for non-dump truck) :**2mm**
- Made year : 2018
- Overall size L x W x H : 12500x2600x2400mm,where H is the height from the ground up to the top of side board (for normal cargo trailer)
- Overall length together power with trailer assembly for normal cargo truck high bed semi-trailer **16.25 m**

12.4 Cargo body inner size for dump truck:

- **Cargo body inner size for dump truck three axle trailer:** L*W*H 11300*2300*2900mm Where H is the height from the ground up to the top of side board (for dump trailer)
- Lifting system side lifting(That can able to lift 40T)
- The location of oil tank (reservoir) for dump truck should be nearby to the gear box for efficient pumping
- corrugated sheet minimum thickness(for dump truck) :**50mm**
- Side board height **1200mm**
- Overall length together power with trailer assembly for dump truck high bed semi-trailer 15.45 m

12.5 Wheel Base and Width:

The theoretical wheelbase (center of front axle to center of Bogie) shall not exceed 4,000mm. The overall width of the vehicle (excluding the side view mirrors) shall not exceed 2500mm.

12.6 Fifth Wheel:

The vehicle shall be equipped with heavy duty; fifth-wheel coupling that provides the link between a semi-trailer and the towing truck, tractor unit. The coupling should consist of a kingpin, steel pin on the front of the semi-trailer, and a horseshoe-shaped coupling device called a fifth wheel on the rear of the towing vehicle. The surface of the semi-trailer (with the kingpin at the center) shall be rotated against the surface of the fixed fifth wheel, which does not rotate.

12.7 Ground Clearance:

The minimum ground clearance of the fully loaded truck shall be **320mm**.

12.8 Front Bumper:

A heavy-duty steel bumper shall be installed on the front of the chassis. The bumper shall span the complete width of the chassis.

12.9 Front Towing Device:

Each vehicle shall be equipped with towing device hook-ups at the front. The towing device hooks-ups shall be of sufficient strength to sustain emergency pulling without damage to the unit.

12.10 Under Coating:

All framing and chassis shall be coated with anti-rust and corrosion resistant.

13. AIR SUPPLY SYSTEM:

13.1 General Description:

The air supply system shall consist of a compressor, reservoir tanks, air lines, warning devices and all necessary coupling, valves and connections which would normally make up the air supply system. WABCO is preferred.

13.2 Air Compressor (PREFERABLY BENDIX):

The air compressor shall be of a pressure-lubricated type, using the engine lubrication system as the lubricant source. It shall be water cooled, drawn from the engine cooling system and the compressor output capacity shall be a minimum of 900 liters per minute at 1,900 RPM at sea level. The compressor shall be the **Double-Barrel** type.

13.3 Warning Device:

An **audible and visual, low-air warning device** shall be installed in the cabin. This device will activate when the air pressure drops below the required pressure to control the fully loaded vehicle as specified by the manufacturer.

13.4 Air Reserve Tanks:

The air reservoir tanks shall have a total minimum capacity of 85 liters. All reservoir tanks shall be equipped with safety and drain valves located in the bottom of the tank. Tanks will be mounted to allow easy access to drain.

Air tank supports and clamps shall be sufficiently dimensioned to withstand excessive vibrations. Additional cable support covered with vinyl is necessary.

13.5 Air Lines:

All air lines shall be mounted to allow normal flow under normal operating conditions. They shall be routed away from places where heat build-up.

14. BRAKE SYSTEM

14.1 General Description:

The brake system shall be an air-operated, manually adjustable & dual circuit air brake system with ABS. Brake Drum shall be balanced with manufacturer specifications. Brake size shall be of the greatest width available for the axle installed.

14.2 Service Brakes:

All service brakes shall be air-operated, with individual circuits for front and rear wheels. A quick-release and limiting valve should be incorporated on the front wheel brakes with the control within the driver's reach. **Manual slack adjusters are required for each wheel.**

The service brakes shall be so designed that the driver is capable of controlling and holding a fully loaded truck-semi trailer combination on a 35 percent gradient. The braking system shall be capable of stopping the fully loaded truck-trailer within 12 meters from a speed of 32 kph on dry level roads.

An emergency mechanical brake shall be incorporated to this system that will enable to stop the truck-semi-trailer combination in case of failure of service brakes. This shall be a spring loaded dual brake chamber design.

Two separate lines, one for the service and another for emergency brake of the semi-trailer shall be installed. The parking brake should be air operated, spring brake chamber and a protection valve that is capable of holding the vehicle, fully loaded, on any grade on which it operates. Gravel protection should be necessarily installed to brakes chamber.

14.3 Engine Brake:

An air-operated engine brake with an operating switch located within the driver's reach should be installed. Retarding of the engine shall be effective enough on lower engine RPM by exhaust gas throttling, including TELMA and Jack brake.

14.4 Mobile Garage (Field Truck shop) For free:

03	<p>4*2 Mobile maintenance vehicle Engine : 4102 Power : 120hp Transmission : WLY6T46 Front axle load : 2.4t Rear axle load : 7.2t Tire : 7.5R16 With all accessory see attachment</p>	For free	1	For free
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❖ **The Mobile Garage (Field Truck shop) Includes :**

NO.	PART NAME	UNIT	QTY.	MODEL	REMARK
1	Van box	SET	1	3850*2050*2100 (Dimension in mm)	
2	Generator & Air compressor machine (including workbench)	SET	1		
3	Welding machine	SET	1	ZX7-400	
4	Drilling machine	SET	1	ZQ4120	
5	Hydraulic Pneumatic jack	SET	1	50T	
6	heavy duty pneumatic hammer	SET	1	-9999	
7	Power startor 12V, 24V	SET	1	AW15	
8	Grinding machine	SET	1	220V	
9	Polishing machine	SET	1	GWS6-125	
10	Working lamp	SET	1	90702A	

15. TECHNICAL INFORMATION

The following technical information/data shall be given in detail:

- a. Work shop Service and repair manuals
- b. Operators manual
- c. Part catalog
- d. Warranty booklets
- e. Vehicle identification and specification data cards
 - Engine, power rating, performance curves, fuel consumption etc, of truck,
 - Details of truck transmission, steering, frame, axles, suspension etc.
 - Details of pneumatic system,
 - Details of electrical components, wiring diagrams, instrumentation and controls,
 - Details of drivers cab and mounting,
 - Details of truck function, construction and dimensions, etc

16. TOOLS AND ACCESSORIES:

- 20m inflation hose For Each Truck
- 30 ton hydraulic jack
- Wheel spanners
- Tire levers
- Driver's complete tools kit
- Jumper cable
- Extension light (for driver use)