

For Construction of roads, bridges and pipeline construction, the below equipment are available with Diamond Group of Companies for the purpose:

Ten Powerful Road/bridge Construction Equipment from Diamond Group:

- **Wheel loader dump truck.**
- **Motor Grader.**
- **Asphalt mixing plant.**
- **Asphalt Truck**
- **Asphalt Paver**
- **Road roller machine.**
- **Crawler excavator.**
- **Forklift truck.**
- **Wheel loader.**
- **Truck Crane.**
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Various Types of Compaction Equipment Use on Construction Site

Compaction is the process of mechanically increasing the density of soil. It is the simple way of increasing the stability and supporting capacity of the soil. Compaction is one kind of densification that is realised by rearrangement of soil particles without a flow of water.

Major reasons for compaction of soil:

- Reduction of air-voids content in Soil
- Increasing load bearing capacities
- Providing Stability
- Reducing water seepage, contraction and swelling
- Prevent frost damages and soil settlement

There are two principal types of compaction force :

01. Static Force:

It is simply the dead weight of the equipment. This is done by applying the downward force on the soil surface and compressing the soil particles. Static force is confined to upper soil layers and limited to the appreciable depth. Kneading and Pressure are two basic mechanisms of static compaction.

02. Vibratory Force:

It is usually an engine drive to create the downward force in addition to the weight of the machine. The vibrating mechanism is usually a rotating eccentric weight of the machine or piston combination. The compactors deliver a rapid sequence of blows to the surfaces, thereby affecting the top layers as well as deeper layers. Vibrations move the material, setting particles in motions and moves them close together for highest density possible.

The different types of compaction equipment used in compaction project depend on the scope of work. The compaction equipment to be used can either be used for some situations or can be a special type which meets the requirements of the particular project.

- Smooth Wheeled Roller
- Sheepsfoot Roller
- Pneumatic Roller
- Vibratory Roller
- Rammer
- Vibratory Plate Compactor

The various types of compaction equipment used in Roads, bridges and building projects by Diamond Group include:

a. Smooth Wheeled Rollers:

It is an important equipment for compaction. It consist large steel drum in front and one or two wheel on rear end.





b. Sheepsfoot Rollers:

Sheepsfoot rollers also known as a tamping roller. Steel drum of Sheepsfoot roller consist of many rectangular shaped boots of equal sizes fixed in hexagonal pattern.



c. Pneumatic Roller:

Pneumatic roller is also called rubber tyres roller. Pneumatic roller has number of tyres at the front and at the rear end.



d. Vibratory Roller:

Vibratory roller consist two smooth drums with the vibrator. One is fixed at front and other one on rear side of vibratory roller. Both drums are of the same diameter, length and same weight.



e. Rammers:

Rammer compactor is used for compacting small area and providing impact load to soil. This equipment is light weight and can be hand or machine operated.



f. Vibratory Plate Compactor:

Vibratory plate compactor is used for compacting different types of soils in narrow and constricted area where it is not possible to use large equipment.



The selection of compaction equipment for building projects depend upon the nature of the mechanical, job size, distance, method of disposal, and construction time assigned, volume and depth of soil to be compacted, type of soil, loads on compacted surface, etc.

Equipment used in road construction varies depending on whether a project involves building a new road, re-carpeting a road or just minor road repairs. Here is a list of commonly used road construction equipment:

The below Roads, Bridges and Pipeline construction equipment available from Diamond Group

1) Motor Grader

Commonly referred to as road grader or a maintainer, motor grader is an equipment used to create flat surfaces for asphalt to be placed on.

Common models consist of three axles, with the engine and cab located above the rear axles at the back end of the vehicle and a third axle at the front of the vehicle – with a long blade in between.



A motor grader.

2) Asphalt Mixing Plant & Equipment

An asphalt plant is used for the manufacture of asphalt concrete and other forms of coated road-stone used in road construction projects.

It combines mineral aggregates, sand and a filler – in correct proportions, heats the mixture and then coats it with a binder.

The plant then keeps the final product heated to avoid setting before the product is laid down in layers.

Mobile Asphalt Plant:



Asphalt mixing plant:



Asphalt Paver:



Asphalt Trucks:



3) Road Roller Machine

Once asphalt is laid down in layers, a roller machine is used to press it down into place. Rollers can be rubber tire rollers, double-drum asphalt rollers or combination rollers and the type of roller used is determined by the mixture used in a road project.





A road roller machine.

4) Crawler Excavator

Also referred to as diggers, excavators are heavy construction equipment used for excavating earth and rocks and loading them onto a dump trucks.

Excavators consists of a boom, bucket and cab on a rotating platform located above an undercarriage with wheels or tracks. They are capable of performing a wide range of work by changing front attachment.



A crawler excavator.

5) Forklift Truck

Also known as fork truck or lift truck, a forklift is a powered industrial vehicle with an attached prolonged platform that can be lowered to pick an object on or below the ground and raised to move the object.

A forklift was initially used for moving objects in factories but the design has been modified over the years to increase its uses.



A forklift truck.

6) Wheel Loader

A wheel loader, also referred to as front loader, skip loader or bucket loader, is a type of tractor used to move a pile of material from the ground and load it onto a truck or into an open pit.

It consists of a front-mounted square wide bucket joined to the end of two arms used to scoop up materials from the ground without spreading it out.

A wheel loader is used to move a pile of material from the ground and load it onto a dump truck.



7) Truck Crane

These types of cranes are usually mounted on the back of a lorry to assist with lifting requirements within a construction site.

They consist of the carrier (called the lower) and lifting component (called the upper), which are joined through a turntable allowing the lifting component to swing from side to side.

Truck cranes are usually compact, fold up, and require negligible mounting space.

A truck crane:



Heavy Crane:



8) Hydraulic Rotary Piling Rig;



9) Hydraulic Sheet Pile Vibratory Hammer



10) Bulldozer:

