

# TG3:19

## Erection, Use and Dismantling of Temporary Rubbish Chutes on Scaffolding

**NASC**

NATIONAL ACCESS & SCAFFOLDING  
CONFEDERATION

### 1. SCOPE

This guidance note considers the safe erection, use, dismantling and maintenance of temporary suspended chutes constructed of detachable sections, attached to scaffolding and intended for the conveyance of small and light waste construction materials over a short distance of up to a recommended height of 10m. They are not suitable for large and heavy masonry objects due to the dangers of blocking and the high impact forces at ground level. This NASC guidance limits chutes to a height of 10m and advises the use of alternative controlled methods of lowering large and heavy objects to the ground.

This guidance note also includes specific details on the risks, control measures and procedures related to clearing blockages (Clause 8.3) which are the cause of most difficulties associated with rubbish chutes.

Under no circumstances should rubbish chutes be used for the conveyance of people.

### 2. DEFINITIONS

#### 2.1 Rubbish chute

A hollow component intended for the contained movement of materials from a higher to a lower level.

#### 2.2 Chute Section

Interchangeable sections capable of joining with other sections of the same design to provide passage for materials.

#### 2.3 Hopper

A funnel-shaped structure intended to restrict overspill and to direct material into the chute.

#### 2.4 Side entry section

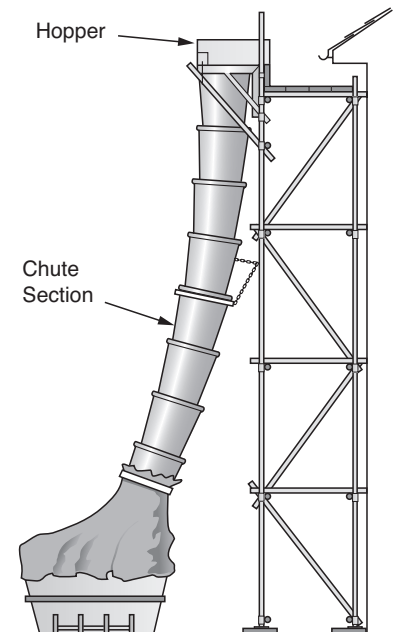
A means of access to the main chute at an intermediate level  
(*Note: These entries should be designed to prevent a shovel or similar implement coming into contact with debris falling down from a higher working level and to prevent debris bouncing out of a side entry.*)

#### 2.5 Liner

An insert, usually metal, to provide extra protection at excessive wear points in a chute.

#### 2.6 Supplier

A hire or sales organisation providing the chute components/assembly.



## 2.7 O/E/M

Original equipment manufacturer of the chute assembly.

## 2.8 TWC

Temporary works coordinator.

# 3. DESIGN

The scaffolding erector should be informed in advance that the scaffolding is intended to support a rubbish chute in order that its effects can be considered in the scaffolding design.

The scaffolding supporting the chute assembly is a non-standard scaffolding, therefore it requires a design check for strength and stability.

**Scaffolding design checks to be considered include:**

1. **Bending capacity of ledgers supporting the suspension bracket and chute assembly.**
2. **Shear capacity and connections of ledgers supporting the chute assembly.**
3. **Additional leg load to adjacent standards supporting the chute assembly.**
4. **Additional tie/restraint to resist overturning moment from the offset (outside of scaffolding) load.**
5. **Additional ties for horizontal load due to wind (up to 3.5kN for every ten meters of chute).**

## Design guidance notes

### A. Dead loads

The attachment brackets as per manufacturer's guidance (generally around 15kg)

The chute sections as per manufacturer's guidance (generally around 10-15kg per chute, depending on thickness and diameter of the chute, and can be more if using a steel liner).

### B. Live loads

To be assessed by a competent designer taking into account the irregular size and type of material being used with frictional load on the chute plus any potential blockages. (1 blocked chute at say a 10kN.m<sup>3</sup> (medium density material) = up to 13.6kN).

### C. Wind load

Horizontal load on the chute assembly. To be assessed by calculation by a competent designer or taken as a tie at every 10m in height with a minimum 3.5kN value.

Safety consideration. The most common universal chute suspension bracket has a safe working load of 150kg. A 10m length of chute assembly weighs approx. 150kg (excluding any live load).

- It is the view of the NASC that using a chute in excess of 10m is not a recommended method of lowering materials to ground, and beyond this height a more suitable and controlled method of lowering large or heavy materials should be considered e.g. a hoist. Following thorough design and construction risk assessments by competent person(s), higher chutes than this may be specified for certain debris materials providing a design and calculations are prepared by a competent scaffolding design engineer and additional chute supports installed as required by the loadings obtained from this document or the chute manufacturer's guidance.

#### 4. SUSPENSION SYSTEMS

- 4.1 Chains should be made of steel of a quality certified by the OEM as conforming to the relevant specification.
- 4.2 Ropes should be made of metal, natural or man-made fibres of a strength certified by the OEM. (*Note:* Guide ropes shall be of known quality but not necessarily certified.)
- 4.3 Ropes/chains should be passed down the chute system and connected to the skip.

#### 5. ERECTION

- 5.1 Chute sections must always be erected in accordance with the manufacturer's instructions, which should be supplied on every occasion when chutes are sold or hired. **Note:** It is the duty of any person who **ERECTS** or **INSTALLS** a rubbish chute for use at work to ensure, so far as is reasonably practicable, that nothing about the way in which the article is erected or installed makes it unsafe or a risk to health or safety at any time, in accordance with current acts and regulations, and approved code of practice in relation to construction works and operations.
- 5.2 To prevent overloading of winches and imposing undue side loads on scaffolding, parapets and roof frames, chutes should always be assembled by adding sections in the vertical position. Raising a chute assembly from the horizontal to the vertical is **NOT** a safe practice.
- 5.3 Erection should be carried out from fully boarded working platforms.
- 5.4 The chute assembly should always be erected leaving a clear space of approximately 1 metre, (or 1 chute section) between the lowest chute section and the skip below.
- 5.5 The chute erector should obtain written confirmation from the TWC that the scaffolding is complete and handed-over to the contractor and is suitable for chute support.

#### 6. ATTACHMENT OF CHUTES

- 6.1 In addition to any attachment made from the top of the chute assembly to the scaffolding, the chute assembly should be attached or 'tied-in' to the scaffolding by adequate load bearing supports at appropriate vertical intervals in accordance with the OEM's recommendations.
- 6.2 If the installation is such that the chute assembly is deflected from the vertical, a guide rope should be passed down the inside of the chute; the upper end of this rope should be adequately secured and the lower end should be adjacent to the rubbish skip. (*Note:* The purpose of this rope, which is not intended to be load bearing, is to prevent kinks and to ensure that chute sections form a smooth curve.)
- 6.3 Lifting appliances (e.g. winches) should be used only for raising and lowering chute sections during erection and dismantling, not for the support of chutes in use.
- 6.4 Lifting appliances should not be used to lower a blocked chute.

## 7. INSPECTION

### 7.1 Responsibility of the Supplier

- To ensure that the means of suspension of the chute complies with current acts and regulations.
- To examine all chute sections, suspension items and fittings for damage, excessive wear and deterioration of components, e.g. cracking, before delivery to the user. Any item considered unsuitable for service shall be withdrawn and replaced or repaired to 'as new' standards. If repairs are made to load bearing items they shall be tested and recertified by a competent person.
- To provide instructions for use.

All safe systems of work associated with the installation, use and dismantling of chutes, including what to do in the event of a blockage, must be passed onto the user.

### 7.2 Responsibility of the Scaffolding Contractor

- To assess the structural integrity and stability of the scaffolding to support the additional loads from the chute and its live load and to provide safe access for the erection and dismantling of the chute.
- To provide the contractor with a hand-over certificate once the chute support scaffolding is completed and ready for use.

### 7.3 Responsibility of the User

To examine visually as far as is practicable, the scaffolding attachments together with all chute sections, suspension items and fittings, daily before use, for signs of wear or damage. Users of scaffolding are obligated under current regulations to inspect scaffolding regularly; it would be prudent to include an appraisal of any chute assembly in the course of this inspection.

Chutes should not be used with damaged or worn components, and should be secured against use until such parts are replaced by the supplier.

**In addition, the user shall provide as necessary:**

- a secure skip/chute cover;
- an enclosure around the skip parking position;
- any guard rails necessary to prevent public access to the discharge area;
- any hazard warning lights and other traffic/pedestrian management arrangements required by the Local Authority if the skip enclosures are on the public highway.

## 8. OPERATION

### 8.1 Instructions

The user must be provided with printed instructions to explain that no attempt should be made to pass materials down the chute which are:

- flammable or soaked in flammable liquids;
- sufficiently hot to cause ignition of other materials or damage the chute itself;
- toxic e.g. asbestos;
- larger than the internal dimensions of the chute;
- liable to cause blockages in the chute.

## 8.2 Prevention of Blockages

Every effort should be made to prevent chute blockage. This can best be achieved by making one competent person specifically responsible for chute operations. Their duties should include:

- ensuring the chute assembly is the correct height above the skip level (clear space of approx 1.0m, or 1 chute section) i.e. between the lowest chute section and the skip below);
- calling for an empty skip in good time before the one in use is full;
- preventing further use of the chute when a blockage occurs;
- only attempting to clear a blockage under direct supervision and in compliance with the supplier's instructions;
- checking for damage to chute sections and fittings after a blockage has been cleared;
- securing in place the skip cover;
- ensuring that guard rails and barriers are in place.

## 8.3 Clearing Blockages

### IMPORTANT NOTE

**When it is apparent that a blockage has occurred the chute must not be used until the blockage has been cleared in accordance with supplier's instructions.**

8.3.1 Any work in connection with clearance of a blockage must be carried out from a safe place of access, under competent supervision. It may be necessary to erect extra scaffolding or use a mobile working platform.

(Note: As a general rule, blockages fall into two categories:

- (a) Exit blockage due to an overfull skip or an assembly whose lowest section is too far into the skip.
- (b) Bridging blockage caused by the use of oversize material.)

8.3.2 Clearance of an exit blockage should commence by securing the chute to the scaffolding to prevent it swinging when any of the blocked sections are disconnected. The lower chute sections can be released from the chains etc., and drawn clear by remote means, such as a rope, to allow the accumulation to enter the skip. If the blockage extends well up the chute, consideration should be given to hauling the skip clear to allow the debris to spill on to the ground.

8.3.3 Clearance of a bridging blockage requires careful consideration because of the potential forces from the blockage once released. This work should be overseen by the TWC using the OEM guidance, taking into account the position of the blockage in the chute assembly and the type of materials in the blockage. Options should include:

- (a) securing the blocked section and releasing tension to allow the removal of the chutes above the blockage.
- (b) removing the sections below the blockage and releasing the blockage from a safe position into a cleared area.
- (c) cutting the side of the blocked section in-situ and removing the blockage before replacing with a new chute section.

## 8.4 Scaffold Guard Rails

Chutes must only be used from scaffolding platforms fully fitted with adequate edge protection.

## 9. DISMANTLING OF CHUTES

Generally, when a chute is no longer required, it should be dismantled by a reverse of the erection procedure. No attempt should be made to lower the chute assembly until:

- all blockages are cleared;
- all tie-in points are free;
- the skip is removed.

Chute sections should be removed, progressively from the bottom, one at a time.

*Whilst every effort has been made to provide reliable and accurate information, we would welcome any corrections to information provided by the Writer which may not be entirely accurate, therefore and for this reason, the NASC or indeed the Writer, cannot accept responsibility for any misinformation posted.*



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