



Matting Solutions for Airport Operators

Are muddy edges on the shoulders of your Airport ground surfaces leading to this?

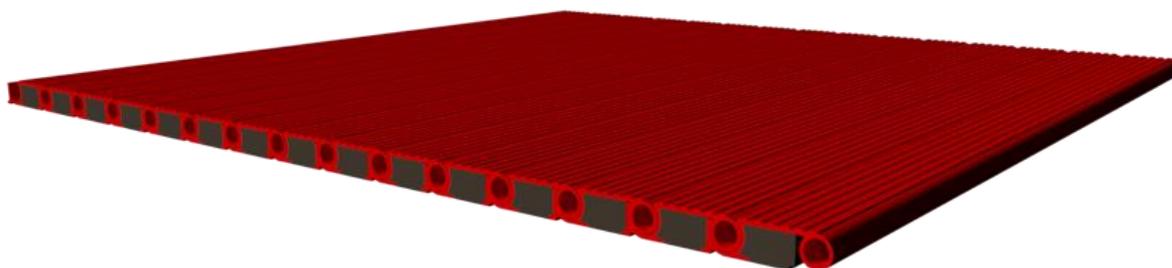


SOLUTION:



Welcome to the F3 Group Aviation division where our focus is to ensure that we have a matting solution for your every need including:

- a) Shoulders for movement and manoeuvring areas
- b) Shoulders for Runways
- c) Shoulders for Taxiways
- d) Shoulders for Apron
- e) Hangarage
- f) Parking bay hardstand
- g) Taxiways
- h) Runways
- i) Aprons



Pro Aero Mats **F3**  **CBRM**

Matting for Aircraft recovery on the ground

To assist with the rapid deployment of matting for an Aircrafts recovery at any airport due to it accidentally `slipping` off from any part of the movement or maneuvering area while utilizing these facilities, the F3 Group has developed a composite base matting infrastructure which can assist with that displaced aircrafts recovery and quickly solve an unexpected situation. (This includes ground recovery from soft, muddy or sand-based surface areas). The advantages of utilizing the F3 Groups ground reinforcement product is that no specialist tools or machinery are required, and our inter-locking mat product is easily washable and re-usable.

Practical training on how to utilize the f3group patented product can be provided remotely or on-site and another positive aspect of this matting is that it can be easily rolled up so as not to take up unnecessary storage space when not in use.

No more need for heavy-duty cranes, time delays, and additional expenses to recover any displaced aircraft at an airfield.



Definition of a Shoulder in Aviation terms: (ICAO Annex 14 Volume 1 Chapter 1)

Shoulder. An area adjacent to the edge of a pavement so prepared as to provide a transition between the pavement and the adjacent surface.

When it comes to an Aircraft accidentally veering off the Runway, Taxiway or Apron edge surface, either while on pushback out of their parking bay on the Apron or, while taxiing on the Movement or Manoeuvring Area, the chances exist that this type of unplanned incident could potentially unfold. Most controlled airfields around the world have either grass or compacted sand aligning either side of these asphalt surfaces. In certain conditions where heavy rains take place for example, these surfaces can easily become muddy, especially because the running water falling on these hard surfaces will naturally migrate towards these areas at some point due to the volume of water build up on the asphalt surface that leads to the movement of water in various directions.

When referring to ICAO Annex 14 it becomes apparent that the requirements for `shoulders` have been included for each of these ground surfaces. In other words, a prescribed distance on either side of these hard surfaces is required to be obstacle-free to facilitate a safe passage during the aircraft's movements on the ground (specifically referring to the aircraft's wingspan in this instance).

NOTE 1: ICAO does not specify that these obstacle-free surfaces are required to consist of any specific content, and this is typically why most airfields have natural vegetation existing in these `shoulder` areas to blend in with the surrounding environment.

At the F3 group, we can supply your operation by utilizing a product, (fitted with a geo-membrane), that can assist in reducing the risk by strengthening the runway, taxiway, or apron shoulders.

NOTE 2: The Pro Aero (Light Duty) Mat is the preferred option for the Apron and Taxiway shoulders.

NOTE 3: Due to the speeds that Aircraft are still upon landing and, before commencing with the taxi phase, the Pro Aero (Heavy Duty) Mat is the preferred option for the runway shoulder.



Generic Airfield layout illustrating the various Matting solutions available:

- Red** – Pro Aero heavy-duty for runways
- Beige** – Pro Aero Light Duty for Taxiway, Apron and Hardstand parking Shoulders
- Yellow** – Additional space for optional matting as per client’s request



Let us illustrate this further by looking at each section of the Airfield individually in order to explain each of these solutions available:

RUNWAYS



The landing speed of an aircraft averages between 60 knots for those that fall within the light category up to approximately 160 knots for any aircraft that falls within the medium to heavy category. No matter which category the aircraft falls into, they are ultimately landing at speed and slowly reducing this forward motion through a form of braking action. At that critical moment when the aircraft just touches down, the landing of the aircraft itself is still not assured until the aircraft has come to a complete landing roll and the pilot is able to commence with the taxi phase. It is between these two phases where an aircraft can easily veer off the runway unintentionally due to conditions such as:

- Slippery runway
- Obstruction on landing
- Mechanical failure
- Accidental (Human Factors)

The f3 group has thus developed a Pro Aero Heavy-duty Mat (with inserts) to ensure that an aircraft in this unfortunate situation has the back up of an additional hard surface to facilitate their braking action as they attempt to bring the aircraft back under control after having veered off the runway. With a PCN of 74 F/A/W/T and a PSI of 825 this matting will ensure that the aircraft has that additional infrastructure available when needed. In order to assist one avoiding unnecessary situations such as where an aircraft needs to be recovered from sand, grass or muddy ground conditions that exist in the shoulder area of any runway why not have a talk with one of our Team to find out how this product can best serve your safety needs and requirements.

TAXIWAYS



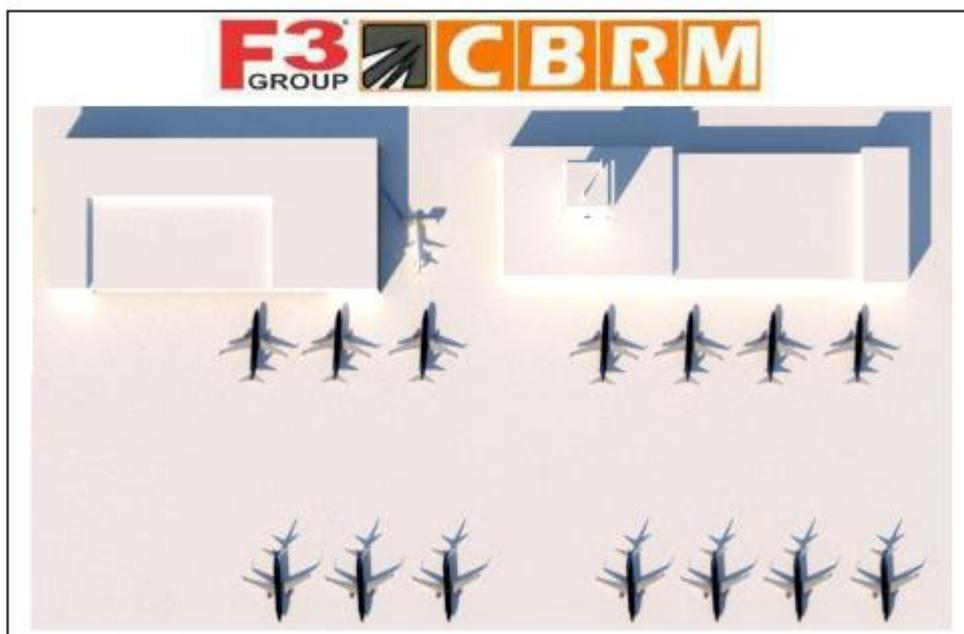
At controlled airfields, all aircraft must comply with taxi speeds whereas at an uncontrolled airfield taxi this is normally observed as a `gentleman`s agreement` considering all procedures as stipulated in ICAO Annex 10 Volume 2. In either instance an aircraft can still veer off the taxiway into the shoulder, (consisting generally of either soft sand, mud or grass) and become stuck due to any one of the following situations taking place:

- Obstructions, (such as animals), resulting in avoiding action
- Mechanical failure
- Accidental (Human Factors)

In addition, an aircraft on tow along the taxiway can become displaced from the Tug, or the tug driver towing the aircraft could become distracted, lose focus, and veer off the taxiway unintentionally.

The f3 group has thus developed a Pro Aero Light duty Mat (without inserts) to ensure that an aircraft in this unfortunate situation has the back up of a shoulder with a PCN of 69 F/A/W/T and a PSI of 200 that could assist with a quicker, far safer, recovery process.

APRON



An Apron forms part of the Movement Area and facilitates not only the parking of Aircraft (where passengers embark and disembark to and from, but also accommodates additional services such as catering trucks, fuel bowzers, aircraft on tow and busses transporting passengers to name but a few. It is considered to be a high-risk area due to the fact that not everyone is in contact with each other while operating within the limits of the Apron itself. It is therefore specifically for this reason that any apron shoulders which exist at your airfield are protected by at least a 50m wide f3group matting (Pro Aero Mat light duty) to compensate for any unplanned situations that could potentially originate here which could cause a huge time delay in the airport operation itself.

HANGARAGE

In the same manner that the f3group can assist you by incorporating their matting as an alternative to asphalt when preparing, runways, taxiways, or any other hard surface, this process can be extended to facilitate aircraft hangars. This is a much more cost affordable option to choose as opposed to asphalt and will give your hangars floor surface a professional look and image.



AIRCRAFT *STACKING ON A HARDSTAND



***Stacking – Long term parking of an Aircraft**

A Hardstand is a paved area that is intended for the parking of all Aircraft types over an indefinite period of time. Although not clearly defined by the International Civil Aviation Organisation (ICAO) a hardstand is used by several aircraft operators worldwide for this purpose so as to increase the capacity of traffic movement, especially at the busier International Airports where time is of the essence. Once the aircraft is re-instated for operational requirements it is merely towed from the hardstand back to the movement area in order to complete maintenance checks etc. prior to being scheduled

The airport's hardstand is conveniently positioned separately from the Movement and Manoeuvring area's so that aircraft being positioned here have no effect on the daily operation of an Airports activities/movements.

The concept of aircraft stacking can be compared to that of the offshore environment where oilrigs are stacked alongside in a harbor, designated offshore area, or shipyard indefinitely while the owners await existing contracts to be renewed or new contracts to be awarded. One distinct difference however between aircraft stacking and rig stacking is that in the event of a rig being stacked, it is manned by a skeleton crew who continually conduct maintenance checks to ensure that the offshore installation is ready to proceed to work at a moment's notice, whereas when an aircraft is stacked it is safely shut down in total and not manned by any standby personnel/crew for this period.

All the movements of aircraft parked on a hardstand are conducted via a tug and ideally, only one movement is managed in this area at a time; i.e. – Either an aircraft is being towed onto a position on the hardstand or being towed from their position on the hardstand to the maintenance area or designated parking bay on the Apron.

With the effects of the COVID-19 pandemic taking its toll globally within the Aviation Industry, several Airline operators are considering relocating their company aircraft to this type of facility until further notice. There are two contributing factors which assist the Airline Operator to make this decision namely:

1. Parking Fees

When an aircraft is parked in a designated parking bay on the Apron they are charged a nominal fee payable per hour (or a portion thereof), which can become very costly when the aircraft finds itself stationary at this position for an unplanned period of time. The Airport Operator needs aircraft to continually move in and out of these parking bays for an allotted time period so as to ensure that the Airport can manage the planned scheduled arrival and departure sequence of aircraft effortlessly. In order to reduce costs significantly when planning for the unknown Airline Operators are opting to make use rather of an Aircraft Hardstand were available for this purpose.

2. Congestion

An aircraft that is parked stationary on a Hardstand will not interfere with the daily movement operation at an Airfield while those aircraft parked stationary on a designated parking bay may find there's situation becomes disrupted once too often due to the Airport Operator having to move their aircraft to another location to make way for the next scheduled arriving aircraft that has been assigned the exact parking bay that your aircraft was previously occupying.

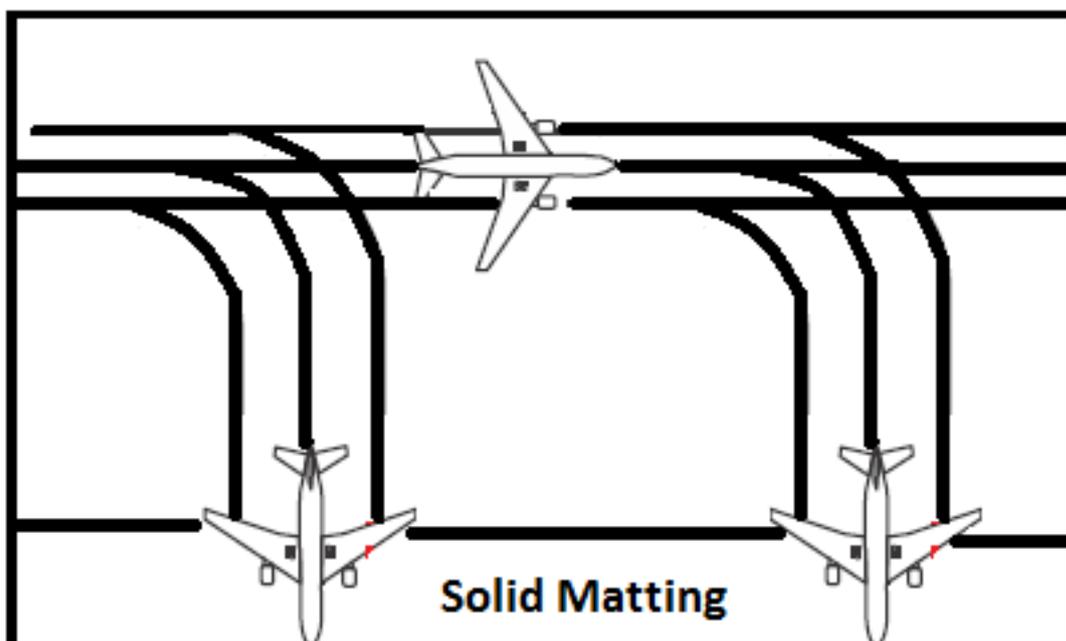
At the F3 Group we offer Airport Operators:

- a) An independent survey to meet the design requirements (plus anticipated budget) for the installation of a Hardstand at the allocated Aerodrome.
- b) The flexibility of providing Composite Base Rig Matting that will facilitate covering both non-concrete and/or asphalt surfaces.
- c) An outcome tailored to meet your Airports operational requirements

NOTE:

In addition to the above, the Airport Operator also has the flexibility of reselling this Matting to several institutions at any stage should they ever decide to discontinue the hardstand (as opposed to utilizing asphalt which would be a permanent fixture).

Additional Aviation Matting Options



The Pro Aero (*Light Duty*) Matting can also be installed as a 3-line or solid surface to reduce costs, depending on the operational requirements of the airport operator. Beveled edging provides a smooth transition, onto the Pro Aero mats. The Pro Aero mats are elevated 40mm with a load factor from 150 tons/m² to 580 tons/m² to facilitate a variety of aircraft and applications.

The installation can be done without the use of machinery and can be installed manually. The matting interlocks, with a patented zip-lock system that only requires foot pressure.

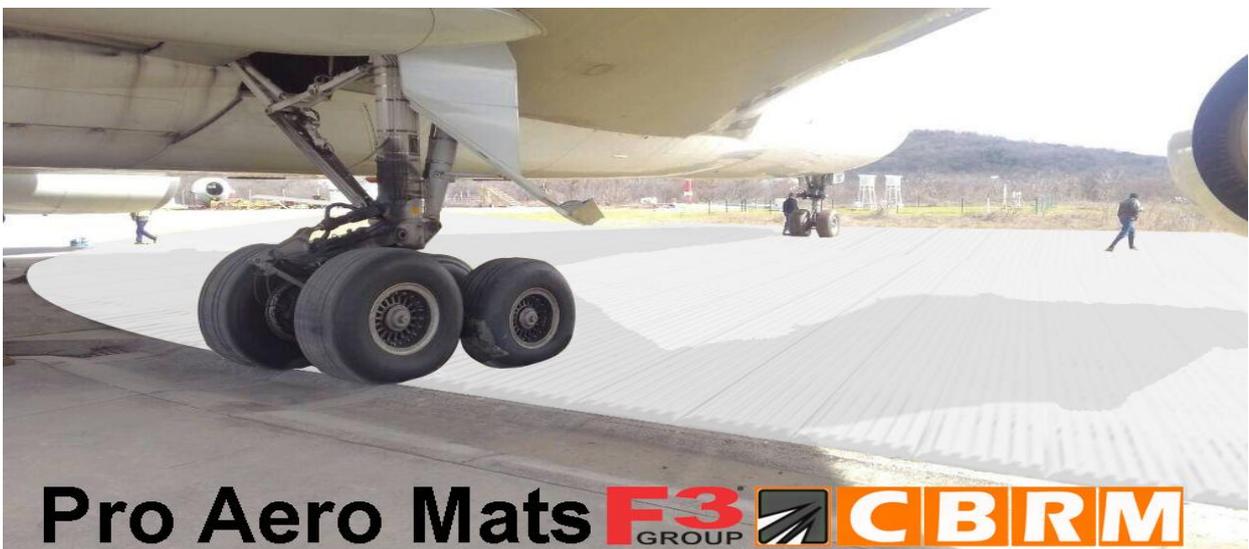
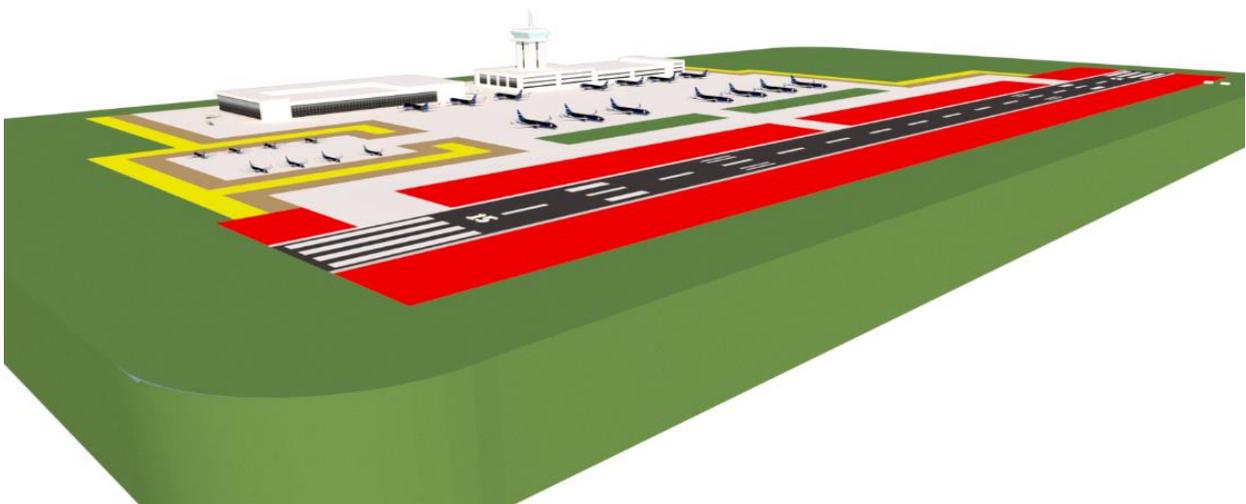
This system is ideally used to facilitate an aircraft hardstand option where Aircraft can be stored in a parked position for an indefinite period.

As per the sketch, this illustrates an example of a 3-lane taxiway veering off the hardstand to a 3-lane parking bay. A solid matting surface at the parking end for the aircraft's nose ensures that the tug can maneuver freely once the aircraft is in position.

NOTE 1: The 3-lane taxiway is designed to incorporate the use of a Tug (width size dependant on specifications) in order to mobilize the aircraft utilizing this 3-lane system

Why not schedule a Zoom meeting with one of our representatives to tell you more about how the F3 Group can provide a matting solution for any situation:

Pro-Aero Matting: The Pro`s and Con`s



1) **Pros & Cons** comparison to client – **Pro Aero Matting vs Asphalt/Concrete**

- Pro Aero Mat vs Asphalt/Concrete - Pros
 - Easy system to install and extract.
 - Rapid Deployable and re-deployable solution.
 - Can be as temporary or permanent as needed.
 - Can be re-located with ease.
 - It is a transportable system.
 - Minimum maintenance required.
 - Replacement panels are available.
 - Multi-use and versatile system for various applications.
 - Value for money.
 - Environmentally friendly and recyclable.
 - Can be resold to earn income after usage
 - Recuperate most of the investment back after use
 - Selling to event, construction & tenting companies
 - Earn rental income for own gain from events, construction & tenting companies.
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- Pro Aero Mat vs Asphalt/Concrete - Cons
 - Imported Lead-time to supply large quantities
 - Freight costs

