

**GUSMER**

# Polyurea Lasts Longer than Paint at Newark Airport

Application Profile  
RAMP Engineering / Gusmer Equipment



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RAMP ENGINEERING INC.  
777.398.2976

# Presentation Objective

- Discuss Continental Airline's need for improved line striping performance at its Newark, NJ terminal gates
- Identify the role of the customer, contractor and the material and equipment suppliers to make this a successful polyurea application

**POLYUREA**

# Contractor Profile

- RAMP Engineering, Inc. is a pioneer in the development of services for airports and air carriers to accommodate aircraft parking
  - Consulting, comprehensive fuel system reports, design of jet fuel tank farms and hydrant systems, ramp surveying, aircraft parking design, existing line removal, and design installation are some of their core services
- RAMP started a second corporation, Airline Painting Services, Inc.
  - Airline Painting Services provides the removal, layout and installation at airports nationwide, while Ramp continues expanding its consulting and design departments



# RAMP Job profiles

- **1993**  
**Continental & Continental Express Airlines / Denver International Airport**  
Design, installation and as-built changes for aircraft parking markings at the A Concourse (39 Gates)
- **1997**  
**US Airways / Philadelphia International Airport**  
Redesign and repainting of all US Airway's gates
- **1997**  
**Bermuda International Airport**  
Design, development and installation to incorporate ICAO standards into their aircraft-parking plan, maximizing the current plan to accommodate the largest aircraft available
- **1999**  
**American Airlines / Dallas Fort Worth International Airport**  
Removal, layout and installation of taxiways and aprons for purpose of expansion



# RAMP Job profiles

- **1999-2002**  
**Global Gateway Project / Continental Airlines / Newark International Airport**  
RAMP is part of the Global C-3 Terminal; phasing of aircraft movement and parking during construction of C-3; coordination with TAMS for Continental Express parking during construction Gateway team with SOM / TAMS for the new C-3 Terminal, determining modifications for all aircraft parking and movement. Focusing on: the redesign of aircraft gate areas to allow larger, new aircraft access with minimum impact to existing gates; fuel pit modifications for temporary 777 hold room, and final fueling and shop drawing modifications for the new 19 gate
- **2001-2002**  
**Application of Polyurea as Ramp striping to 44 gates at Newark International Airport**
- Ramp recently completed the complete removal and installation of the entire C-1, C-2 and A-2 gate areas at the Newark hub for Continental. The polyurea coating will provide significant cost cycle benefits to operations, negating the need for annual repaints and enhancing the safety and visibility during winter operations



RAMP ENGINEERING INC.

772.394.2776

# New Requirements for Line Striping Performance

- Continental Airlines, one of Ramp's top clients, had requested alternatives to paint for use at their Newark Hub
- The use of traffic marking paint required continual maintenance and an annual repainting to keep the markings visible for pilots to follow



The background image is a faded photograph of an airport tarmac. In the upper left, a worker in a blue uniform is visible. In the lower right, a white truck with a trailer is parked. The trailer has the text 'RAMP ENGINEERING INC.' and a phone number '771.391.2976' printed on it. In the upper right, the word 'GUSMER' is visible in large, blue, semi-transparent letters. The overall scene is slightly out of focus, emphasizing the text overlay.

# What Material to Use?

- Not sure of a coating system or type of material, RAMP had some previous experience with epoxy used as a test for United Airlines
- The problem with the epoxy type materials was the “cure” time and their reaction to many of the chemicals that are used to service aircraft. It just was not feasible for use at aircraft gate areas

# What Material to Use?

- Ramp soon visited Gusmer to discuss plural component technologies and alternatives to paint and epoxies
- Gusmer's experience working with 3M and Linear Dynamic's in automated spraying of stencil pavement marking applications.
- However, epoxies were not our favorite choice of materials due to the abrasiveness of the material on the equipment.



# Polyurea Trials Begin

- Gusmer contacted SPI for an aliphatic yellow polyurea with an adhesion enhancer to adhere to the blacktop
- RAMP was estimating 30 miles of multi-colored marking would be required at Continental's Newark facility



# Trials and R&D Continue

- The next problem that had to be overcome was the ability to dispense reflective glass spheres into the polyurea.
- Ramp's engineers developed a system using a pressure pot attached to the cart with its own compressor to apply the beads under pressure to the top of the material just after it was sprayed, but before it had time to gel. This was important for two reasons.
  - The introduction of reflective spheres was necessary from a safety standpoint
  - The addition of the spheres, in the quantity that were now allowed to apply, (twice as much as paint) could be used a “non-skid” material to further enhance safety.



# The Final Trial

- We did several system trials here at Gusmer using our equipment and their Polyurea.
- The challenge at the time was to mount our gun on Ramp's walk behind cart and to lay down a stripe as narrow as 2".
- We went as far as laying down a stripe in a prototype area for Continental Top Management approval.
- The approval resulted with Ramp ordering our Custom Mobile Spray Rig for Polyurea pavement marking.
  - As far as we know it is the first of it's kind.



# Let the Work Begin!

- Ramp completed the first gate at Newark Airport in August of 2001 and has recently completed 100% of Phase I of their project for Continental Airlines in Newark.



# Airport Operations

- The Gate area must be removed and re-striped within a 12-hour shift.
  - They would give RAMP Engineering the gate after the morning push of the originator flight at approximately 0700.
  - Work would continue on the gate until the evening terminator flight came in at approximately 1900.
  - The entire gate had to be hydro-blasted to remove the existing paint and clean the area to be coated with polyurea. After a survey team “shot” the new points to be striped, the polyurea team could then begin the gate marking procedure.
- What you put down for markings to accommodate certain types of aircraft will undoubtedly change in the future to accommodate other types of aircraft.
  - The markings put down in polyurea had to be applied so that they would last at least 3 years to be of value to the client on a “cycle cost” basis, AND they had to be REMOVABLE!

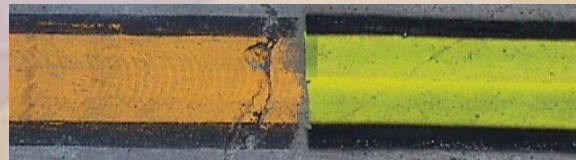
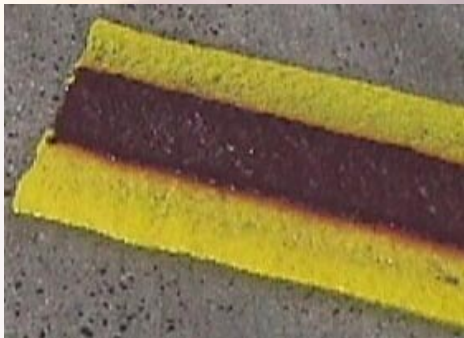


# Polyurea vs. Paint

- The application of traffic marking paint is certainly easier and quicker than that the application of polyurea type materials.
- But the extra efforts and time taken to apply the polyurea will pay off for the client in lower cycle costs.
- The fast gel time of the polyurea and it's resistance to most chemicals make the extra effort worthwhile to the client

# Polyurea Success

- If the Polyurea is applied correctly and the surface is properly prepared, the stripe should be superior over the paint under the same conditions.
- Ramp states that with their system and the Gusmer equipment modified for their trailer they can finish a multi-color gate layout in one day with Polyurea.
- After a year of product applied, jet fuel, solvents and grease do not seem to attack the Polyurea, which will blister and peel paint.
- The colors applied, black, blue, yellow, red and white have little or no signs of fading due to UV stability.



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# Polyurea Success

- RAMP and Continental Airlines are very pleased with the first year application of Polyurea.
- Their goal is for the material to hold up for three years. This is far beyond the expectations of paint-applied markings.
- The second phase of the project is the Global Gateway terminal with 19 multiple use positions, which is scheduled to begin the spring of 2003.



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